
Contents

Chapter 3. Geography, Addresses, and Questionnaire Printing and Labeling

(Page numbers here omit the chapter prefix, 3-, which appears as part of the number of individual pages and appendixes. Each chapter is paginated separately for convenience of issue)

	Page
INTRODUCTION	3
GEOGRAPHY	3
Geographic Areas	3
Maps	4
Master Reference File	8
GBF/DIME Files	9
ADDRESSES	10
Introduction	10
Address List Preparation in TAR Areas	10
Address List Preparation in Prelist Areas	13
Address and Geographic Reference Materials for Field Offices	16
Address List Work in the Field Offices	16
Casing and Time-of-Delivery Checks	17
QUESTIONNAIRE PRINTING AND LABELING	17
Questionnaire Printing	17
Mailing-Package Assembly and Labeling	19
APPENDIXES	
3A. Geographic Areas	21
3B. Advance Post Office Check Cards	32
3C. Prelist Address Register	34
3D. Prelist Office Sites	39

Chapter 3. Geography, Addresses, and Questionnaire Printing and Labeling

INTRODUCTION

This chapter covers three major census preparatory activities: (1) creation of the geographic structure and tools needed to assign persons and housing units to the appropriate political and statistical areas, (2) compilation of an address list to be used in the mailout of census questionnaires and as a control for the check-in of the returned questionnaires, and (3) printing of census questionnaires and their assembly into mailing packages.

GEOGRAPHY

Part of the geographic work for the 1980 census involved defining, delineating, and identifying the various areas for which census data were to be collected and published. The geographic tools for the census included maps showing these areas, a master reference file (MRF) that catalogued them and showed their relationships to other entities, and computerized files used to assign geographic codes to addresses geographic base file/dual independent map encoding (GBF/DIME) files.

During 1982, a Geographic Operations Task Force at the Census Bureau conducted an indepth review of the geographic operations at the Bureau, focusing on the 1980 census and making recommendations for improved methodologies to be introduced into the geographic system for future censuses. Particular attention was given to maps, the MRF, the GBF/DIME files, and other geographic files. In writing this section, reference is made to the task force's report, "An Assessment of the Major Geographic Products Prepared for the 1980 Decennial Census and Recommendations for Future Geographic Operations and Products," 1982. Also referred to is the report of the Geographic Working Group of the District Manager's Advisory Group, "Geographic Problems in the Decennial Census," April 1982.

Geographic Areas

The 1980 census provided data for numerous political and statistical areas:

Political areas

- States, District of Columbia, Puerto Rico, and outlying areas
- Counties and equivalent areas
- Minor civil divisions (MCD's)
- Incorporated places
- American Indian reservations
- American Indian subreservation areas
- American Indian tribal trust lands
- Alaska Native villages
- Congressional districts
- Election precincts
- Neighborhoods

Statistical areas

- Regions and divisions
- Standard consolidated statistical areas (SCSA's)
- Standard metropolitan statistical areas (SMSA's)
- Urbanized areas
- Census county divisions (CCD's)
- Unorganized territories
- Census designated places (CDP's)
- Census tracts
- Block numbering areas (BNA's)
- Enumeration districts (ED's)
- Block groups (BG's)
- Blocks

These areas are described briefly in chapter 1 and in more detail (with the numbers of each) in appendix 3A. (Other areas not listed above, such as school districts, transportation zones, and ZIP Code areas, are discussed in Ch. 8, "Data Products and Dissemination.")

The Census Bureau organized these areas into hierarchies for tabulating and reporting statistics. Political and statistical units intermingled in the hierarchies; for example, States were combined to define the census geographic divisions and regions, counties were the basic building blocks for SMSA's (except in New England), and counties were subdivided into MCD's and CCD's, which in turn were comprised of blocks or ED's. Figure 1 illustrates these and other relationships.

Except for SMSA's and SCSA's, the Census Bureau was responsible for establishing areas that were specially delineated for statistical purposes, although in doing so it relied on recommendations from State and local officials. The Office of Management and Budget established and identified component areas of SMSA's and SCSA's based on published criteria.

The Census Bureau received guidance from a number of outside sources in the delineation of statistical areas. Census Statistical Areas Committees (CSAC's), established in each SMSA (and non-SMSA county with census tracts), played an important role in delineating such areas. The CSAC's generally included representatives from city and county government agencies, economic development councils, chambers of commerce, regional planning commissions, councils of government, neighborhood associations, universities and colleges, social service agencies, citizens' groups, newspapers, public utilities, and local business firms. Local chapters of the American Marketing Association, the American Statistical Association, the American Planning Association, and other nationwide groups with an interest in small-area statistics also participated.

The CSAC's were organized through local initiative and received technical assistance from the Census Bureau. Following Bureau guidelines, they drew boundaries for census tracts in areas new to the tract program, decided where to divide ex-

isting census tracts that had grown too large in population and where to adjust boundaries no longer appropriate for census purposes, and assigned numbers or suffixes to new or split tracts. They also were offered the opportunity to help the Census Bureau determine ED, CCD, and CDP boundaries.

Local GBF/DIME file coordinating agencies, which created and/or updated the files, were largely responsible for assigning new block numbers (following Census Bureau guidelines and subject to Bureau approval) in areas not block-numbered in 1970, thereby also determining the block groups. In general, 1980 block groups were continuous with 1970 block groups, and 1980 block numbers were the same as those used in 1970, except where the features defining blocks had changed.

Bureau staff conferred extensively with State and local officials regarding boundary delineations outside of metropolitan areas. They discussed such matters as the boundaries of census tracts and CDP's in counties outside SMSA's, and local recommendations for ED boundaries. ED's were defined in all areas of the United States by the Bureau. Locally devised ED plans were accepted, subject to Bureau guidelines, outside of block-numbered areas.

Maps

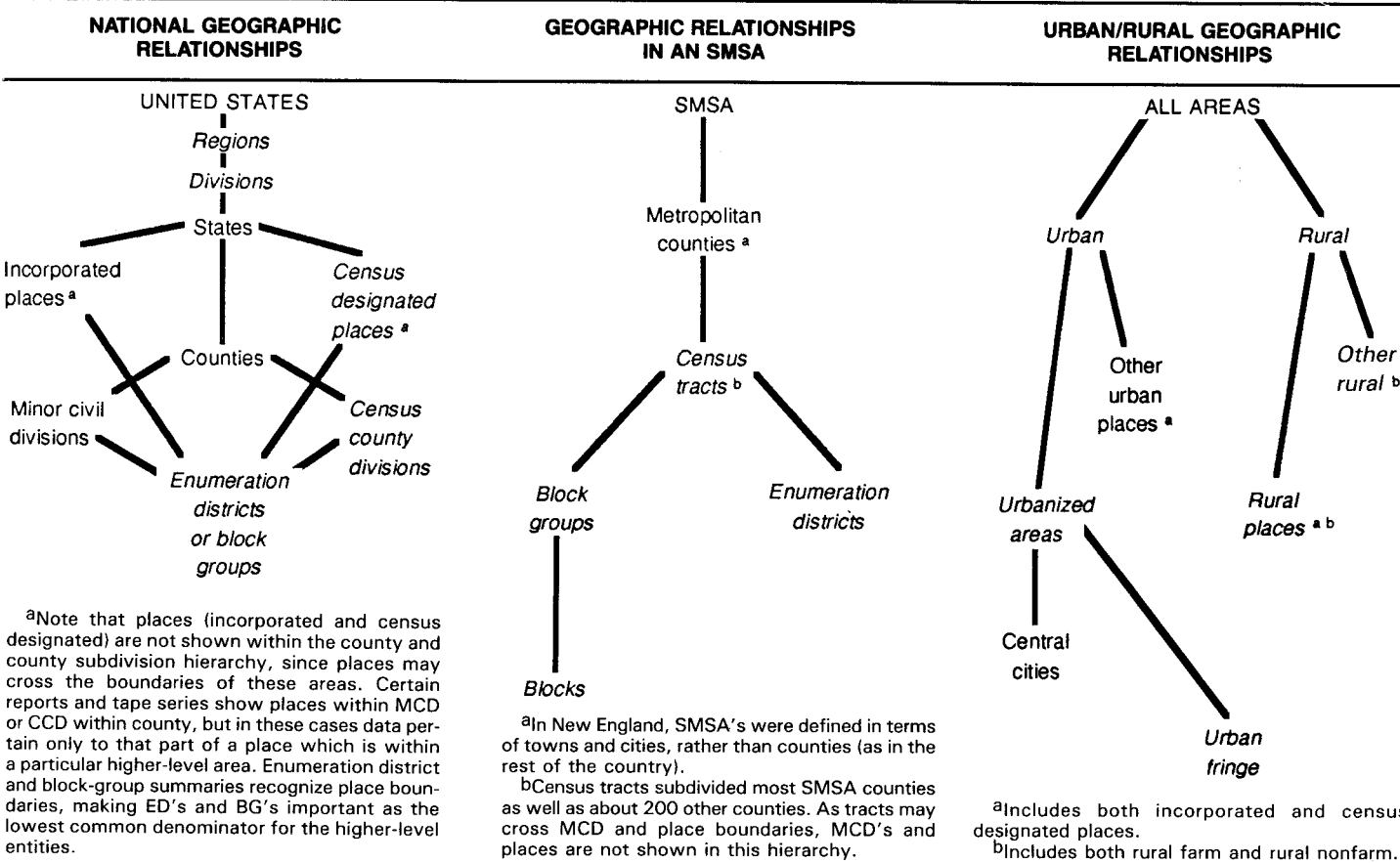
Maps are essential tools in the collection and interpretation of census data. The Census Bureau undertook major mapmaking activities in order to meet its extensive and complex cartographic needs. For the 1980 census, the Bureau produced

more than 32,000 individual mapsheets to cover the United States, Puerto Rico, and the outlying areas. The maps were prepared in a massive operation conducted largely at its Jeffersonville, IN, facility. Many of the maps were obtained from State and local agencies, but had to be enhanced for Bureau use by the deletion of information irrelevant to census-taking purposes and by the addition of census geographic areas.

The official census date for the boundaries of political areas was January 1, 1980. The maps provided for field work reflected boundaries in effect on January 1, 1978, for mail census areas, and January 1, 1979, for conventional areas. These cutoff dates had to be established to complete production of maps in time for key census operations. After the enumeration, the maps and other census records were updated to reflect political boundaries as of January 1, 1980, and census questionnaires were recoded, where necessary, to their correct geography. Any boundary changes, such as annexations, effective after January 1, 1980, were not reflected in the final census tabulations.

While this chapter will focus on the production of the field maps, maps were also essential to interpreting census data, i.e., relating the figures to the proper geographic area. Maps were sent to local officials during the review of field counts (May-July 1980), though these maps did not show the January 1, 1980, political boundaries. Updated maps (without the 1980 urbanized area boundaries and the final CDP boundaries) were made available in early 1981 with the counts that were sent to State redistricting officials. Final maps were ready for sale to data users

Figure 1. Geographic Relationships (Italics indicate statistical areas)



beginning in mid-1981. The production of map sheets for sale to users and maps included in the printed census reports are discussed in chapter 8.

Types and sources of maps—There were essentially five basic series of maps used in the 1980 census—metropolitan/vicinity, place, place-and-vicinity, American Indian reservation, and county.

For the 1970 census, the Census Bureau undertook the development of its own series of maps to provide uniform coverage of the densely settled portions of metropolitan (SMSA) counties. This was referred to as the metropolitan map series (MMS). The area covered by the MMS was expanded for the 1980 census. A related series—the vicinity map series (VMS)—was developed to cover areas of sizable urban development not located in SMSA's. In the few instances where these sheets covered an entire county, there was no separate county map sheet; otherwise, the MMS and the VMS were treated as insets to county maps. Generally, the scale for the metropolitan and vicinity maps was 1 inch to 1,600 feet. In selected areas with very dense development, some map sheets were produced at a scale of 1 inch to 800 feet; some sparsely settled areas were mapped at a scale of 1 inch to 3,200 feet or even 1 inch to 6,400 feet.

The 1980 census required updating of the MMS sheets from 1970 and creating new MMS and VMS sheets. All GBF/DIME file areas were covered on MMS map sheets, but the MMS usually included additional territory. In a few areas, local agencies created GBF/DIME files that extended beyond MMS coverage, so they either prepared their own MMS-type maps or used enlargements of U.S. Geological Survey (USGS) maps; some of these maps were used in the 1980 census. None of the areas shown on the VMS had GBF/DIME-file coverage. These two types of maps were developed and updated along slightly different lines.

MMS sheets had been created for the 1970 census as the basis for developing address coding guides—the predecessors to the GBF/DIME files—for certain areas. These maps were updated by local agencies beginning in 1972 as part of a continuing GBF/DIME file update program. The same agencies were asked to correct and update existing and newly created MMS sheets for other portions of their SMSA's. MMS sheets for newly designated GBF/DIME file areas (the program was expanded after the 1970 census) were prepared by the Census Bureau and updated by local agencies in advance of creating the GBF/DIME files.

The Bureau determined in late 1977 there was a need to create new MMS-type sheets for non-GBF/DIME file areas, so a major effort was undertaken to create these sheets, using USGS maps as a base, and to involve local agencies in their review and update. In SMSA's, the maps became part of an MMS; outside of SMSA's, they were classified as VMS sheets, which were created in much the same way as MMS sheets. Indeed, VMS and MMS sheets can be considered as a single series. Agencies in VMS areas were contacted in May 1978 and asked to review the maps within a 3-month period. This review, usually done by local agencies different from those working on the GBF/DIME files and MMS sheets, was completed in late 1978.

The Bureau developed the place map series to cover incorporated places and CDP's not shown in their entirety on

MMS/VMS sheets. As with the MMS and VMS, place maps were regarded as insets to the county map sheets. The scale varied from sheet to sheet. Most place maps were created by superimposing census boundaries and names over base maps supplied by State or local governments.

For medium-size places—generally with 15,000-40,000 population—not covered by MMS and VMS sheets and having dense development outside their limits, the Bureau developed a series of maps referred to as the place-and-vicinity map series. Also included in this category were map sheets showing non-MMS/VMS places which (1) had enclaves of unincorporated territory within their boundaries, (2) had some small adjacent unincorporated territory identified with block or ED numbers, or (3) covered two or more contiguous places. In all other respects, place-and-vicinity maps had the same sources and characteristics as place maps and were insets to county map sheets.

Maps for American Indian reservations were acquired from the Bureau of Indian Affairs (BIA) and State governments in the fall of 1976. In the summer of 1977, tribal authorities for each reservation were asked to update the road network on the maps, but many chose not to participate. The updated information was posted to the county maps. For 20 (of 275) reservations where the road network shown on the BIA maps was known to be outdated or incomplete, about 5,200 aerial photographs were obtained in a cooperative effort with the BIA and USGS for use in enumerating these reservations. ED's were added to the BIA maps and were used in field operations as supplements to the air photo "maps." The BIA maps were insets to the county maps.

The county maps were the primary component of the Bureau's 1980 map coverage. A complete set of these maps covered the entire Nation. Each of these maps covered an entire county (or county equivalent) with one or more map sheets. Where these maps did not provide sufficient detail for densely settled areas, the Bureau used one of the types of maps described as insets to the county maps; the portions of counties where such alternative coverage existed were shaded on the county map sheets. In a few instances, a county is entirely covered by MMS sheets, in which case those sheets comprise the county map. Most maps in the county series were at a scale of 1 inch to 1 mile.

The primary sources for maps covering counties and places not covered by the MMS/VMS were the individual State departments of transportation. In the spring of 1974, each one was asked to send the Bureau a complete set of its county and place maps. The Bureau also requested that revisions or updates to maps be submitted as they were produced. The States were contacted again in the fall of 1976 and the fall of 1977 to remind them to send revisions and updates to the Bureau.

To augment the materials obtained from the States, the Bureau contacted several other map sources. In the fall of 1975, it requested maps from each non-SMSA county government. At about the same time, letters were sent to over 500 regional planning commissions and councils of government requesting county and place maps. In the spring of 1976, 144 private companies throughout the United States were asked to provide lists of areas for which they produced maps.¹ In the fall of 1977, maps and

¹Geographic planning specialists from the Bureau's regional offices visited private map sources in the fall of 1977 to ascertain whether any new mapping had been completed; however, private maps were little used because of the difficulty in obtaining copyright releases.

letters were sent to the governing bodies of all places outside of MMS coverage asking them to either update the maps or send the Bureau better maps. A further effort was made in the summer of 1978 to obtain maps for those places for which none had been received or for which better ones were needed. The maps acquired for non-SMSA areas were compared and evaluated, and the best were selected as the base maps for the 1980 census. Many required extensive cleanup to omit information not relevant to census needs and some had to be completely redrafted. The final phase of map selection was completed in the summer of 1978.

Although military installation maps were not a separate map series, the Bureau made a concerted effort to obtain such maps from various military commands and organizations. The Marine Corps and the Coast Guard assigned liaisons to work with the Bureau and maps were obtained from both of these organizations. The Naval Facilities Engineering Command provided maps for most naval installations, and almost all maps covering Air Force bases were obtained from the Air Force Environment Planning Division. From February 1977 to October 1978, telephone calls were made to hundreds of military installations, especially Army bases, to obtain maps for additional areas. Beginning in November 1978, another effort was made to secure maps for installations that had not responded. If no map was received, the Bureau used the best map available that showed boundaries and streets.

Boundary overlays and Boundary and Annexation Survey—After maps had been selected and cleaned up or redrafted, if appropriate, a white mylar (plastic) copy was prepared. The mylar copy became the base for a multilayered master office control map (MOCM). The base map showed national, State, and county boundaries and names. Overlays for the MOCM's were prepared to display (in colored pencil) all census statistical and political boundaries and names. The information on the overlays was transferred to "artwork" and then reproducible maps showing information on the base maps and overlays were produced. For distribution to the field offices, diazo paper copies were made of "reproducible" maps.

The boundaries on the artwork version of the overlays were to be shown using preprinted symbols. This symbolization could not be accomplished in time to supply maps for the prelist operation and some early district office field operations, so some boundaries were drawn by orange makers instead and were differentiated by the use of broken, dash/dot, and solid lines. Later, a standardized set of dry-transfer symbols was used to identify each type of political and statistical area on the census maps. To avoid the possibility that two or more coinciding boundaries might obscure one another, the symbols were designed to overlay each other in combination and still be identifiable.

Each of the overlays was based on special source material, most of which came from the Boundary and Annexation Survey (BAS) conducted annually by the Census Bureau and the programs to develop or modify statistical areas between 1975 and 1977.

The political/statistical boundary overlays showed boundaries and names of MCD's, CCD's, incorporated places, CDP's, American Indian reservations, and Alaska Native villages. The BAS was the primary source of information for names and boundaries of counties, MCD's, and incorporated places. From

1970-76, only incorporated places having 2,500 or more people were surveyed; beginning in 1977, all places, regardless of size, and all counties were canvassed. As part of this survey, an official of the government of each place was furnished with a map showing its latest legal limits according to Census Bureau records; the official was asked to review the map, update the boundaries where necessary, and certify that the maps reflected the corporate limits as of January 1 of the survey year. A questionnaire was also included in the survey requesting information about each boundary change, including the type of change (annexation, detachment, merger, etc.), the number of the official ordinance or resolution authorizing the change, the effective date of each action, the size of the area annexed or detached, and estimates of the population and number of housing units in the area. County officials were asked to review the boundaries of the county and the MCD's (if recognized by the Bureau) and to verify the names of all MCD's and incorporated places in the county. If a new place was identified, it was contacted for a map and related information. Maps of legal boundaries and lists of area names were obtained from the governments of Puerto Rico and the outlying areas.

The BIA provided certified boundary information for Federal reservations based on BIA's interpretations of treaties, statutes, executive orders, and court orders. For the State reservations, the Bureau relied on information in State records to determine the official boundaries.

Names of Alaska Native villages, as recognized under P.L. 92-203 (the Alaska Native Claims Settlement Act), were identified for the Bureau by the State of Alaska. As these entities did not have official boundaries, maps were not obtained for them. Each village name was associated with a location on a map.

The Bureau provided guidelines and worked with State agencies, the governments of Puerto Rico and the outlying areas, and local Census Statistical Areas Committees (CSAC's) to define the boundaries for CDP's. The Bureau worked with State agencies and CSAC's to review and, where appropriate, modify CCD boundaries and names in the 20 States where MCD's were not recognized for census purposes.

CSAC's provided the input for the census tract overlays and some of the ED overlays. Census tracts were delineated using general guidelines provided by the Bureau, with the local plans subject to detailed review and approval by the Bureau in order to maintain an overall uniform standard. In areas that did not have census tracts, but were to have numbered blocks, the Bureau established block numbering areas (BNA's), which also were shown on the tract overlay. The Bureau worked with the CSAC's, State and regional agencies, and tribal officials to prepare local ED plans for nonblock-numbered territory.

An "other boundary" overlay was prepared to identify military installations, Federal and State parklands, selected national forestlands, election precincts, American Indian subreservation areas, and American Indian tribal trust lands. These entities had to be recognized in the ED delineation process.

For areas that had local ED plans, the Bureau reviewed the plans for acceptability and then applied the boundaries, revised where necessary, to the ED overlay. For nonparticipating areas, the Bureau laid out ED's, based on detailed procedures, to fulfill the requirements for data collection and tabulation. After an ED plan was prepared, the ED's were numbered and recorded on control lists.

Block numbers for the block-numbering overlay for areas with GBF/DIME-file coverage were assigned by the local agencies working on the files and the maps. In other areas, the Bureau usually assigned the block numbers. These included "administrative block numbers" (for enumeration purposes only) in otherwise nonblock-numbered areas. In prelist areas, these may have been shown on a block-number overlay or preliminary ED overlay, while in conventional areas they were always on a separate overlay.

Maps for field use—The first need for maps in the field was for the prelist operation, from February to November 1979, in which census enumerators listed addresses in the non-tape address register (TAR) portion of the mail census areas. Prelist enumerators used large-scale maps of their ED's as a guide for staying within their assigned territory, for canvassing it systematically, and for marking the location of housing units and group quarters. Small-scale maps of each prelist area were provided for crew leaders and for use in the prelist office.

As the district offices opened in January 1980, they were sent district office master maps, maps to be used in recruiting, and two sets of maps to be used in the field work, one by the supervisors and the other by enumerators.² The district office master maps were a set of map sheets showing political and statistical area boundaries and names; census tract, block-numbering area, and ED numbers and boundaries; and block numbers. The recruiting maps were duplicates of the district office master maps and were used by the recruiter to spot the location of applicants' residences to make sure that, as far as possible, enumerators lived in or near the ED's to which they were assigned.

Each crew leader received the portion of the supervisors' set of maps showing the geographic areas in his/her district. Enumerators were given larger-scale maps that showed the boundaries of, and streets and block numbers within, the area contained in their assigned ED's. Without these maps, the enumerators would not know the territory for which they were responsible, and thus would be likely to omit a portion of it or mistakenly include part of a neighboring ED. The maps also helped the enumerators cover their ED's systematically, locate every housing unit and group quarters, and assign the correct geographic codes to the unit.

The next maps required for census operations were those used in the local review program (discussed in chs. 1 and 5). All symbolization work had been completed for these, whereas it had not been for the prelist maps and some of the district office maps. The maps also reflected corrections resulting from errors—missing or duplicate ED or block numbers, missing or incomplete boundaries, etc.—discovered by prelist and district office personnel through various operations and reported to a geographic processing unit in Jeffersonville where they were reviewed and, if appropriate, entered on the control maps. The local review maps still reflected "precensus" boundaries for governmental units—January 1, 1978, for mail census areas and January 1, 1979, for conventional areas.

The last phase of field map development involved the creation of "replacement" maps showing ED's that had to be split

(separated into two or more parts) to reflect political limits as of January 1, 1980, and other appropriate changes or corrections. A map was prepared for each ED that was split. These maps were sent to the district offices from June to August 1980.

Map problems—There were problems with both the production and quality of 1980 census maps. With regard to production, maps for both the 1979 prelist offices and 1980 district offices were completed substantially behind schedule. The last of the prelist maps were due in the field by March 1979, but were not shipped to the offices until July 1979. To hasten distribution, most of the maps were sent without being cut to size and mounted on backing sheets and without ED boundaries highlighted in color and reviewed for accuracy. These operations had to be performed in the field offices, further delaying the prelist.

Many maps were illegible or incorrect. Because prelist map production fell so far behind schedule, there was no time to complete all the overlays using dry-transfer symbols. Instead, orange markers were used to delineate the ED boundaries. When paper copies of these "orange line" maps were made, the ED boundaries became wide black lines on the paper prints; they could not always be distinguished from other boundaries, or it was unclear what features they followed. Also, the boundaries may not have matched the boundaries on the MOCM, which was the basis for master reference file coding, ED separations, artwork for map reproducibles, etc. Some ED boundaries ended at the border of one map sheet and did not continue in the same location, if at all, on the adjoining sheet. ED numbers were not posted for some areas, while other areas had two or more numbers. Some block numbers were inverted, omitted, repeated, or obscured by other map features.

Maps were delivered late to many of the 1980 district offices as well, with the result that pre-Census Day field operations requiring maps were delayed in some areas. As in the prelist offices, the district office staff had to review the maps and solve numerous problems prior to preparing the maps for enumerators. Because of the errors in the first set of master maps, a revised set was sent to most district offices. The prec canvass operation, in which enumerators updated mailing lists for areas of the country where addresses were purchased from commercial vendors (i.e., TAR areas), was delayed in some offices by the decision to plot TAR ED's in Jeffersonville rather than in the district offices. It was felt that this operation, and the resolution of related problems, could be handled more effectively at a centralized location, but it also meant that the maps could not be sent to the district offices as early as expected.

The aerial photographs used as enumeration maps on some American Indian reservations also presented serious problems. Because the photographs were unrectified, the roads and other features on many photos could not be lined up from frame to frame. The photo maps, formed by piecing together individual photos, were large and cumbersome; some of the photos were not in their proper location when they were first put together and had to be corrected in the district offices by technicians sent from headquarters and Jeffersonville. Roads and structures could not be easily detected on some photographs by untrained persons. Because of these shortcomings, some enumerators turned to other map sources.

²The enumerator maps used in the prelist operation were reused in the 1980 district offices containing prelist areas.

Master Reference File

The MRF was a master geographic control file on the computer from which various other control files were generated for use in gathering, tabulating, and publishing census data. The MRF contained a hierarchical inventory of all the political and statistical areas within the United States, Puerto Rico, and the outlying areas, including their proper names, numeric codes, political status, and relationships to other entities.

The utility of the MRF can be illustrated by considering some of the types of information it provided for an incorporated place:

1. The legal name and political classification of the place.
2. Whether it was a functioning legal entity.
3. Its population for 1960 and 1970 and number of housing units for 1970.
4. The territorial relationship of the place to its county and MCD, i.e., whether part, coextensive, etc.
5. In a subfile of the MRF, whether it had changed its name or political status since the previous census, or had experienced boundary changes.
6. Whether it was in an urbanized area.
7. In which field (district) office area it was located.
8. Whether it was part of an SMSA and/or SCSA.
9. Which congressional district(s) it was in.
10. All lower-level geography associated with the place (census tracts, if any; ED's; blocks, if any; etc.).

There were a number of major uses for the MRF. First, it served as an editing tool; the code structure of the MRF was the standard against which all other reference files and lists used in the census were edited and corrected. For instance, the GBF/DIME files were edited by using the MRF to determine whether the codes for a combination of block, census tract, place, MCD/CCD, and county were correct. Discrepancies between the files were identified, but time was not available to research and correct most of them; only a small number of high-level mismatches were resolved and the appropriate file revised. Discrepant records that could not be corrected were "disabled" from the version of the GBF/DIME files used for geocoding addresses.

Second, the MRF contained information that controlled various facets of census operations. It specified, for instance, whether a particular area was to be enumerated by the mail census method or by conventional techniques. District office control information facilitated the distribution of address registers, labeled questionnaires (sent to the appropriate post offices within a district office area), and geographic reference materials to the 409 district offices.

Third, the MRF provided the legal names and relationship codes required for the automated generation of publications. At the same time, the final version of the MRF reflected the January 1, 1980, relationships between geographic entities. This ensured that data would be tabulated for any unit of geography as often as required for publication at various levels. For example, the MRF had to contain the information that Denver County, Denver CCD, and Denver city were coextensive, so that the same data would be presented at all three levels.

Fourth, the MRF was used to generate documentation of the geographic code structure used in the census. An example was the geographic identification code scheme (GICS), a set of tables that presented the names and codes of political and statistical

areas for which data were tabulated. (See Ch. 8, "Data Products and Dissemination" for a description of the GICS.)

The MRF contained seven basic record types—State, county, MCD/CCD, place, census tract, geographic tabulation unit base (GTUB), and ED. Appended to each ED record was a listing of its component blocks, if any. Each of these types of areas is discussed in appendix 3A except the GTUB, which was the basic building block or structural element of the MRF. GTUB's honored all statistical and political tabulation boundaries (except ED's and blocks), and contained all of one or more ED's. In addition to the seven basic record types, a number of subfiles were prepared. Some contained the names of certain entities represented in the main MRF only by codes, such as SMSA's, regions, divisions, Indian reservations, etc. Others showed the relationship of ED's and blocks to election precincts, contained data on land area, recorded information on changes in geographic entities since 1970 (to be used in footnote production), etc.

Four basic versions of the MRF, reflecting boundary updates and geographic corrections, were produced at different stages of the census: "precensus" MRF, "field count capture (FCC)" MRF, "collection" MRF, and "tabulation" MRF. At all stages, extensive editing and review were performed to ensure the structural integrity of the file and to verify legal values and relationships. The "precensus" files, produced clerically from maps and reflecting corporate limits as of January 1, 1978, for mail census areas and January 1, 1979, for conventional areas, were completed from October 1979 to March 1980, about 6 months behind schedule, due primarily to the delays in map production.³ The "precensus" MRF was used as the basis for computer-defining TAR ED's, editing GBF/DIME files before they were used to geocode TAR addresses, controlling prelist keying, and providing district office, ED, and block numbers for census questionnaire labels, and as the control file for prelist keying.

Shortly after production of the "precensus" MRF, a first "field count capture" file (FCC-I MRF) incorporating TAR ED's, some late changes, and many corrections from a variety of reviews and edits was prepared. This file was used for aggregating and controlling population and housing counts for the local review program. A second "field count capture" file, (FCC-II MRF, not completed in final version until December 1980 for all 50 States and the District of Columbia), was constructed for the production of preliminary population and housing reports; it was the first in which the MRF geography reflected the official reference date for census geography—January 1, 1980. The "collection" MRF was derived by matching basic MRF records with the data acceptance capture file, which had been produced using the geography (district office, ED, and block numbers) shown on the questionnaires during the microfilming operation in the processing offices. This file also included corrections and boundary updates not included in the previous file, especially those resulting from the local review operation. The advance reports and redistricting statistics were derived using the "collection" MRF. The "tabulation" MRF, used as the basis for final published census reports, was created by using final codes for a number of geographic areas whose existence and extent were dependent on the counts themselves—SCSA's, SMSA's, urbanized areas,

³Separate files were produced by State for prelist and conventional areas and by SMSA for TAR areas. The prelist files were completed from November 1979 to January 1980; the conventional, January to March 1980; and the TAR, October 1979 to January 1980.

CDP's, and size categories. Late corrections continued to be inserted into the tabulation MRF until mid-1982. Once the tabulation MRF was used for processing 1980 census data, no further changes to it were allowed, so that all census publications reflected a consistent set of areas. Corrections that were not carried out or known in time to be reflected in the "tabulation" MRF were shown as errata in the publications or in subsequent materials prepared by the Bureau.

GBF/DIME Files

The emphasis in this section is on the use of the GBF/DIME system for geocoding 1980 census addresses. The system has many other uses as an information management tool in planning. GBF/DIME files as a product of the 1980 census are discussed in chapter 8.

GBF/DIME files for 276 SMSA's were the Census Bureau's tools for assigning geographic codes to the addresses purchased from commercial vendors.⁴ These files were created from the Bureau's MMS and are a computerized representation of the information in the MMS. A geographic base file presents street map features in a form that can be used by computer; dual independent map encoding provides a method for representing map features numerically for processing by computer, based on the theory that the continuity of the street network around a given block can be verified by two independent tests.

The GBF/DIME concept was derived from topology and geometry, in which every point, linear feature, and area is described in relation to all neighboring features. The point (or "node point") on a map where a street or other map feature, such as a city limit or a river, intersects another street or feature, comes to an end, or changes direction, is labeled with a dot and given a unique identifying number. A line drawn between two node points is a straight-line segment, and each street, river, railroad track, municipal boundary, etc., on a metropolitan map can be considered as one or more such segments. Curved lines are divided into a series of small straight-line segments.

For each segment, a GBF/DIME record contains numerical codes for such higher level geography as State, county, MCD/CCD, and place, and the information illustrated by figure 2.

Figure 2. Contents of a GBF/DIME Record



⁴In addition to the 276 SMSA's for which computer geocoding was undertaken, there were GBF/DIME files for 2 SMSA's that were not included in the mail census—Anchorage AK, and San Juan, PR.

When the address file for a particular SMSA is matched to the GBF/DIME file for that SMSA, geographic codes can be assigned to each address. For instance, the address 132 Atlantic Avenue, an even-numbered address on the right-hand side of the street segment, would be assigned the codes for block 205 and tract 4009. Since tract/block combinations are unique within county (e.g., there is only one block 205 within tract 4009), higher-level geographic codes and codes for other lower-level areas also can be appended to an address if the coded areas are unique to block 205.

Between 1969 and 1971, planning agencies in 196 of the then 233 SMSA's participated with the Bureau in the development of the original GBF/DIME files as successors to the address coding guides (ACG's) used to geocode purchased addresses in the 1970 census. ACG's were created for the urban cores of 147 SMSA's, though only 145 were used in 1970 geocoding and other census activities, because two of the SMSA's were subsequently defined as nonmail areas. The files soon became outdated due to modifications in geographic boundaries and street patterns, and the establishment of over 40 new SMSA's in the period 1970-73 necessitated the expansion of the number of available files. Files already established had to be updated and maintained to reflect current information and files had to be developed for newly designated SMSA's. To accomplish this, the Bureau established the CUE program to correct, update, and extend the GBF/DIME files and the metropolitan map sheets upon which they were based.

Local agencies (mainly councils of government or regional and county planning agencies) carried out the CUE program, with the Bureau providing the necessary maps, clerical procedures, processing methodology, computer programs, and technical assistance. The Census Bureau helped defray most of the costs of creating and updating files through a series of joint statistical agreements (JSA's) with the local agencies.⁵ Prior to fiscal year 1977, the Bureau funded 50 percent of the costs; after that, 75 percent. The first JSA's for file work related to the 1980 census were issued in 1975. Those SMSA's that did not sign JSA's did the CUE work under other funding arrangements, or the Bureau had to do it.

Under the JSA's, the local agencies were to return the corrected and updated GBF/DIME files and the associated metropolitan map sheets by October 1, 1978. About one-fourth of the SMSA's had completed their work by then. Many agencies were given extra time to complete the final edits, while the Bureau was completing other operations related to its work on the files. In late 1978, files were called in from some agencies and the work was completed by the Bureau, either in its regional offices or in its Pittsburg, KS, facility. It was not until early 1979 that all completed files were received from the local agencies.

The local agency work on the files included various quality-control procedures and computer edits. When the files were received from the local agencies, they were subjected to further edits. Errors found during these edits were resolved clerically if the number was above a specified tolerance level. After the first series of Bureau edits, the local agency GBF/DIME files were reformatted for use in matching to address files and were again edited and checked for geographic errors. The GBF/DIME files were

⁵In the early stages of the program, other Federal agencies, particularly the Departments of Transportation and Housing and Urban Development, also provided funding.

matched against the precensus MRF and records were flagged as unusable if they disagreed with the MRF.

ADDRESSES

Introduction

The 1980 census used the mailout/mailback technique in areas containing about 95.5 percent of the population. With this method, addressed questionnaires were delivered on March 28, 1980, to each housing unit on the Bureau's address lists, and respondents were asked to mail them back on Census Day, April 1. Housing units for which questionnaires were not returned were visited by census enumerators. The remaining 4.5 percent of the population was enumerated using the conventional, door-to-door method. Unaddressed questionnaires were delivered to housing units by the U.S. Postal Service (USPS); householders were instructed to fill out these forms and hold them until an enumerator visited, rather than mail the forms back to the census office.

The cornerstone of the mail census method is an address list that is as complete and accurate as possible. For the 1980 census, this list took the form of tens of thousands of preprinted address registers—one or more for each ED—that were generated from computer files. The address registers, which were shipped to the district offices soon after they opened, contained the address of each housing unit that could be coded to a particular ED and served as the control on census field operations. A questionnaire was mailed to every address in the register and returned questionnaires were checked against the addresses listed in the registers; if a questionnaire had not been received in the field office, an enumerator visited the housing unit. In conventional areas, addresses were listed at the time of the enumeration.

The procedures used to create address lists differed by type of area—TAR or prelist. TAR (tape address register) describes urban areas in SMSA's for which there was post office city delivery, mailing lists that could be purchased on computer tapes from commercial vendors, and GBF/DIME files. Based on these variables, the boundaries of TAR areas—called the "blue line"—were plotted by headquarters staff during 1977 and 1978. Maps showing the extent of city delivery areas with street name and house number addresses were obtained from individual post offices. Maps or lists showing the areas covered by the GBF/DIME files came from the local GBF/DIME file coordinating agencies or were prepared in the Geography Division at Bureau headquarters. It was to include in the TAR area any rural-delivery areas with street-name/ house-number addresses, but they had to be deleted because the commercial mailing lists did not cover them; these areas were prelist instead.

All other mail census areas were prelist areas, in which the original lists were in handwritten form and were compiled by census workers in the field. Regardless of the method used to acquire the original lists—TAR or prelist—the addresses were subjected to a number of updates and checks by the USPS and by census enumerators. The purpose of these checks was to assure that the lists were as complete and accurate as possible. The TAR addresses were updated by the USPS in an "advance post office check" prior to the printing of address registers and their delivery to the district offices. TAR address lists were further improved prior to Census Day in an operation called

"precanvass," in which census enumerators added, deleted, and corrected address listings. Both TAR and prelist addresses were checked twice by the USPS between the time address registers were delivered to the district offices and Census Day, in the "casing" and "time of delivery" checks. Each of these operation is discussed below.

The following chart shows which operations were performed for TAR and prelist areas, or both.

TAR areas	Prelist areas
Address lists purchased from commercial vendors. Oct. 1978-April 1979.	Census enumerators compiled address lists in the field. Feb.-Nov. 1979.
Advance post office check conducted by the USPS. June 1979.	Handwritten addresses keyed into computer. June 1979-Jan. 1980.
Additions and corrections keyed into computer. July-Sept. 1979.	
Final computer geocoding of commercially purchased addresses. Sept. 1979-Jan. 1980	
Both areas	
Address register(s) for each ED generated by computer and sent to district offices. Dec. 1979-Jan. 1980.	
Census enumerators geographically coded and added addresses to registers in the "yellow card" operation. Jan.-Feb. 1980.	
Census enumerators updated address lists in prec canvass operation. Feb.-Mar. 1980, in most areas.	
USPS conducted casing check. March 5, 1980.	
USPS delivered questionnaires and performed time-of-delivery check. March 28, 1980.	
CENSUS DAY, April 1, 1980.	

Address List Preparation in TAR Areas

Two of the major steps involved in creating complete and accurate mailing lists in TAR areas—the purchase of lists from commercial vendors and the advance post office check—will be discussed in this section. These operations occurred prior to the opening of the 1980 census field offices. Other operations for improving address lists in TAR areas, such as the "yellow card" operation, prec canvass, and the USPS' casing and time-of-delivery checks, occurred after the census district offices opened; they are outlined later in this chapter.

Purchase of lists from commercial vendors—For city-delivery areas with GBF/DIME file coverage, the Bureau took advantage of existing computerized address lists compiled by private companies. Because of deficiencies in these lists, several major operations were designed to improve them, including the advance post office check, prec canvass, etc. Starting with these lists and subjecting them to updates and improvements was considered less costly than the alternative of having enumerators start from scratch. Computerized address lists were available only from private companies for 1980. The USPS generally did not have such comprehensive lists and, where it did, it could not by law provide them to the Census Bureau.

Chapter 3. Geography, Addresses, and Questionnaire Printing and Labeling

The Bureau requested that potential vendors submit proposals in early August 1977, with a September 6, 1977, deadline for submissions. A formal evaluation of the seven proposals submitted was conducted from October 1977 to June 1978. Only four of the submittals were considered, because three vendors did not offer unique apartment designations in multiunit structures, a prerequisite for the Bureau's needs; two other vendors offered apartment designations for only some SMSA's and were under consideration for contract award only in those areas.⁸

Five factors were considered in determining which proposals to accept, and points were awarded for each factor, up to a total of 200.

1. Coverage, or the completeness of an address file, measured by matching a sample of a vendor's file to an independent list. 80 points.
2. Quantity, or the total number of SMSA's and addresses offered. 50 points.
3. Cost, or price per address. 40 points.
4. USPS carrier route number availability and quality. 10 points. (Having a carrier route number with each address allowed the Bureau to sort addresses by carrier route before asking the USPS to check them. If the USPS had had to sort the addresses by carrier route, it would have charged the Bureau for this service.)
5. Previously demonstrated capabilities:
 - a. Relevant experience of the company in producing comprehensive address files. 10 points.
 - b. The individual experience and expertise of the company's key personnel. 10 points.

For the purposes of the evaluation, SMSA's were grouped into 18 clusters, first on the basis of whether a particular vendor could supply addresses for an SMSA, and then by the size and geographic location of the SMSA. Entire clusters were awarded to the vendors deemed to have the best files for the clusters.

In late September and early October 1978, the Bureau awarded contracts to three vendors for computerized files containing addresses for 276 SMSA's. The vendors were asked to delete from their files addresses with ZIP Codes not in TAR areas; however, when one vendor fell behind in delivery of files, the Bureau deleted the non-TAR addresses itself. In order to improve the coverage in some SMSA's, the Bureau matched the files of the vendor that won the contract for those SMSA's against files from a second vendor; addresses unique to the second vendor's files were added. In all, the address files received from the vendors contained about 42.5 million unique TAR addresses.

The purchased files began arriving from the vendors in the late fall of 1978, with the Bureau receiving half of the total by the end of January 1979, and addresses for all 276 SMSA's were received by the last week in April. Once the address files were on hand, they were analyzed to see if there were any major problems, then put in a standard format so they could be geographically coded. Prior to final geocoding, the files were updated in the advance post office check.

Advance post office check—Over the course of the census, the USPS aided the Bureau in three important ways: It checked the

accuracy and completeness of address lists, delivered questionnaires to households, and returned the forms to the district offices. The Bureau reimbursed the USPS for the work it performed.

The advance post office check (APOC) was one of the three USPS updates of addresses for the 1980 census. Originally intended to cover all mail census areas, it had to be limited to TAR areas because of delays in preparing computerized prelist address lists. Postal carriers sorted labeled address cards supplied by the Bureau into their mail cases in the post offices and reported addresses for which there were no cards. Address labels, printed by a private company for each of the 42.5 million purchased TAR addresses from computer tapes supplied by the Bureau, were affixed to buff-colored address cards (forms D-700A; see app. 3B for facsimiles of APOC materials) in the Bureau's Jeffersonville, IN, facility. The USPS distributed the labeled cards to individual post offices through its bulk mail centers and management sectional centers.

The APOC was conducted in two waves—the first, the week of June 4-8, 1979, and the second, the week of June 20-26, 1979. Most of the work was done in the first wave. Address files for some SMSA's were being matched against 1970 census address files to enhance their coverage; labeled cards for these were not completed in time for the first wave, and so were checked in the second wave.

When a carrier found an address on his/her route for which there was no address card, he/she was instructed to fill out a blue card—the "Post Office Report of Missing Address" (form D-702). If an entire multiunit structure or several units at the structure were missed, the carrier was to fill out one blue card for the basic address (house number and street name) and write the apartment designations on the back. In this way, valid addresses not included in the purchased files were added to the Bureau's address list.

In addition to filling blue cards for missed addresses, the carriers were instructed to check the mailing addresses on the buff cards for accuracy and completeness and to make corrections, as necessary. The carriers also marked cards "duplicate," "business only," or "undeliverable."

As a result of the APOC, over 5 million addresses were added to the computer files, and more than 5 million corrections were made. An unexpectedly high number of corrections (about two-thirds of the total) had to be made to carrier route numbers. The number of TAR addresses increased as a result of APOC from 42.5 million to 47.5 million. This number included some 900,000 addresses the carriers marked "business only" or "undeliverable," and 300,000 they had marked "duplicate."

The adds and corrections were keyed onto computer tape in the Bureau's processing centers in New Orleans, LA, Laguna Niguel, CA, and Jeffersonville, IN. These correction tapes were later merged with the computer address files that had been purchased originally. APOC materials—blue cards, address cards with corrections, and cards for addresses that were undeliverable or duplicates, etc.—were returned by the USPS to New Orleans for check-in and processing; some of these were later shipped to Jeffersonville and Laguna Niguel for processing. The check-in of returned APOC materials proved to be more difficult than expected. They were not returned in an orderly fashion—that is,

⁸An appropriate address for TAR areas consisted of house number, street name (including directional prefixes and suffixes), and apartment designation (where relevant), in addition to post office, State, and ZIP Code.

⁹See Ch. 9, "Research, Evaluation, and Experimentation," for evaluation of USPS operations during the 1980 census.

Chapter 3. Geography, Addresses, and Questionnaire Printing and Labeling

by ZIP Code within SMSA—but came back in bits and pieces of carrier routes. Materials were not received for a few carrier routes and special efforts had to be undertaken to track down cards for some entire ZIP Codes that were not returned.

In general, the materials were returned slowly from the post offices, and this delayed the start of production keying until early July 1979.⁸ Keying was completed in early September. One problem that slowed the keying operation was that instructions for filling address cards were not followed uniformly by carriers, so a prekeying clerical edit of the cards had to be instituted. One problem was that carriers had designated as special places a number of addresses that were not special places by the Bureau's standards. (See chs. 1 and 5 for special places.)

Experience from the 1970 census and test censuses for 1980 showed that a significant number of the addresses the postal carriers had marked "business only" or "undeliverable" (the latter were called "nixies" by the USPS) were actually deliverable residential addresses. Therefore, the "business only" addresses and "nixies" from APOC were sent back to the USPS on hand-addressed cards (form D-700C) on a flow basis from July to September 1979, in an operation called the "nixie" check, or APOC II. A sample of good addresses (i.e., those that had not been marked "undeliverable" or "business only" in APOC) was included so that carriers would not know which were good or had been previously "nixied," and thus would have to check each address.

The purpose of the "nixie" check was to see whether the addresses (other than the cover sample) would again be marked "business only" or "undeliverable." Addresses that were so marked a second time were called "double nixies" and were deleted from the master address files; those that were not were left in the files. The deletion operation could not be completed in time to prevent the "double nixies" from being printed out in the address registers along with all the other addresses; lists of "double nixies" therefore were sent to the 1980 census field offices where they were to be deleted by hand.

Once the advance post office and "nixie" checks were completed and the computerized address files had been updated for a particular SMSA, the addresses were ready to be assigned geographic codes.

Geocoding addresses—In the 1980 census, geographic codes were assigned to addresses either by computer or manually. In prelist and conventional census areas, geographic codes—district office, ED, and block number—were assigned by enumerators using census maps in the field. In TAR areas, most addresses were geographically coded (geocoded) by computer. This geocoding operation required, in addition to purchased address files, computerized geographic base files (GBF's) that contained the geographic codes for a particular range of addresses, and a computer system for matching the address files to the base files.

The major objective of the geocoding operation for the 1980 census was to code accurately as many of the purchased ad-

dresses as possible. The addresses that could not be coded by computer were printed out on "yellow cards." These were sent to the district offices to be geocoded either by office clerks or field enumerators.

Another major goal, of course, was to complete computer geocoding in a timely fashion so that subsequent dependent operations could be completed; these included grouping of addresses into ED's, printing address registers, and affixing labels (containing an address and geographic codes) onto questionnaires. The final geocoding was conducted on a flow basis by SMSA, beginning in October 1979 and ending in early January 1980.

Before the address files were matched to the GBF/DIME files, they were analyzed for problems and the addresses were standardized to facilitate matching, i.e., the components of the address were placed in their correct fields and properly formatted, assigned standard abbreviations, and then put in sequence for matching. The computer program used to match addresses was an algorithm that required an exact character-by-character match between the address record and GBF/DIME file before assigning geographic codes to the address file.

There were essentially two computer matching operations. All addresses were matched initially to the GBF/DIME file. Addresses that failed to match this file exactly, or matched but the GBF/DIME file contained geocoding error flags, were compared with a "dictionary" file. The "dictionary," which was initially derived from the GBF/DIME file and updated several times thereafter, contained alternate or variant street name spellings.

Unlike the match to the GBF/DIME file, which needed to be exact, the match to the "dictionary" introduced equivocation into the geocoding system. Equivocation involved coding where an exact match was not possible but where limited differences could be accepted, for instance, when vowels "i" and "e" in a street name were switched or when a final "s" in a street name was dropped. If an address matched in the "dictionary," the related GBF/DIME file name was appended to the address and used in a rematch to the GBF/DIME file. Equivocation was allowed on only one address element (i.e., direction, name, or type) and the subsequent rematch had to be exact on all remaining address elements.

Addresses that remained unmatched were grouped into unique ZIP Code/street name combinations. If the number of addresses in one of these clusters met a predetermined threshold, the cluster underwent clerical review. The remedies that could be undertaken included relating clustered addresses to GBF/DIME file addresses as variant spellings via the "dictionary," correcting the GBF/DIME file address records, and adding missing streets and "building name" records to the GBF/DIME file.

There were several reasons why addresses on the address file might not have matched to the street segments on the GBF/DIME file; the updates to the GBF/DIME file and the "dictionary" were attempts to overcome these factors:

1. An address would match on street name, but not on a house number range.
2. The address file may not have contained directional indicators such as "north" or "south" to distinguish an address segment, even though the direction may have been part of the street name and was contained in the GBF/DIME file.

⁸About 500 rented Entrex keying machines were delivered and installed in March-May 1979. Most of the machines, which were used to key both TAR APOC and prelist addresses, were installed in the New Orleans and Laguna Niguel processing offices, but there was also a limited amount of keying capacity in Jeffersonville, IN, and in the Kansas City, KS, regional office. TAR APOC keying was conducted in New Orleans, Jeffersonville, and Laguna Niguel, and prelist keying was done at these three sites plus Kansas City.

3. Some street name spelling differences—such as Collins Road and Callings Road—could not have been accounted for in the “dictionary” without clerical intervention. Furthermore, some streets were known by two or more different names, only one of which appeared in the GBF/DIME file.
4. Some street names or other deliverable addresses may not have been contained in the GBF/DIME file, or residual errors remained in the GBF/DIME file.
5. In some instances, apartment units may have been assigned to a building name rather than to the house number/street name of the structure.
6. There were clerical errors in transcribing information from maps to the GBF/DIME file or to the master reference file.

Many of the nonmatches could have been resolved had there been more time to conduct clerical research of the problems.

Address files were matched to GBF/DIME files in three cycles, the dates of which were as follows.

Cycle	Began	Ended
1	Jan. 1979	July 1979
2	Sept. 1979	Jan. 1980
3	Oct. 1979	Jan. 1980

The first cycle was essentially a trial run to determine the extent to which the GBF/DIME file covered the address file, to determine the clerical workload for uncoded address clusters, and to update reference files. It was during this cycle that the “dictionary” file was created.

Parallel to this geocoding cycle, the labels to be attached to the address cards for APOC were produced. The APOC corrections and additions were incorporated into the address file for matching to the GBF/DIME file in the second cycle. With the additions and corrections from APOC (no addresses were deleted from the files), the number of addresses grew from the 42.5 million at the start of APOC to 47.5 million by the final cycle of geocoding. Only 77 SMSA's that still had a sufficiently high non-coding rate after the second cycle were run through a third match.

Had all the operations necessary for geocoding been completed sooner, geocoding could have been structured so that more time would have been allotted for clerical resolution to adequately complete the job, and all three cycles would have been run for all areas. These operations included receipt of original address files from the vendors, incorporation of the results of APOC I and II, and completion of final GBF/DIME files and the MRF.

Of the 47.5 million addresses for which a match to GBF/DIME files was attempted, 40.9 million matched and were coded while 6.6 million failed to match and were not coded. The uncoded addresses included about 640,000 that were determined to be non-TAR addresses. The coding rate for TAR addresses only was 87.2 percent, with a range of 69 percent for the SMSA with the lowest rate to 97 percent for the one with the highest. The coding rate was 90 percent or above in about one-fourth of the SMSA's, 80 percent or above in five-sixths, and above 70 percent in all but one.

Address List Preparation in Prelist Areas

Between February and the end of November 1979, census enumerators listed some 35 million addresses in prelist areas—

mail census areas for which addresses were outside city-delivery areas and/or there was no GBF/DIME file coverage.⁹ When the listing was completed, the registers containing the listed addresses were boxed and shipped to one of the Bureau's processing centers where the listings were keyed onto computer tape. Once that had been done and various checks were performed, the file was used to generate computerized products: (1) address labels for attachment to the questionnaire mailing packages and (2) printed address registers for use as master control lists in the district offices.

The scope of the prelist operation was much larger in 1980 than in 1970, when only about 7.2 million addresses were prelisted. This was largely due to the expansion of the mail census method into areas, such as rural sections of the South, that were not covered in the 1970 prelisting operations.

Prelist cost about \$33.6 million. This exceeded the amount budgeted by nearly \$4 million, largely because there were 5 million more addresses listed than anticipated.

The prelist operation started behind schedule, advanced slowly, and went on considerably longer than anticipated largely because of delays in the production of the maps essential for carrying out the field work. In addition, there were the usual problems in a massive field operation: hiring and retaining staff, low production rates by the listers, finding people at home, etc. As originally planned, the operation would have started in mid-January, progressed on a flow basis, and finished in time to ship the address registers from the prelist offices to the processing centers and complete keying by the first week in October 1979; however, only one-third of the keying had been finished by that time, and it continued into January 1980.¹⁰

The listing operation was to have been completed in four overlapping waves beginning at 1-month intervals. The prelist workload in several entire States was to have been accomplished in each wave, with about 70 percent of the work scheduled for the second and third waves. The wave structure was based on the expected availability of maps, weather conditions in various areas, and the desire to distribute the keying workload over a period of months. As noted earlier, the map delays caused major changes in the prelist schedule, so that both the field work and keying were compacted into a shorter time span. The wave structure essentially collapsed and areas were prelisted on a flow basis based primarily on the availability of maps. In some States, metropolitan map sheets were available sooner; in others, the nonmetropolitan map sheets were available sooner. Thus, within States the work was sometimes divided between MMS and non-MMS, a division that created organizational complications for the field offices. The delay in the field operations also caused staffing problems because it was difficult to pinpoint when recruits could be brought on. An unexpectedly large amount of map work, such as cutting out and mounting individual ED maps, had to be completed in the field offices. In addition to the maps being late, some were of poor quality because of problems in legibility and missing detail.

As a result of the prelist scheduling problems, a planned APOC for prelist addresses was canceled, and the APOC was conducted only for TAR addresses. The advance check of prelist addresses

⁹For more detail, see the unpublished Field Division report, “Field Operations Report of the 1980 Decennial Census: Prelist,” June 1981.

¹⁰Some 1.5 million addresses were not keyed for various reasons—illegible, inadvertently overlooked, not received in time, etc.

had been planned as a device to improve the quality of the listings, and additions and corrections to the lists would have been keyed into the system as they were for TAR areas. The prelistings were, however, updated in the casing and time-of-delivery checks.

Procedures—Prelist procedures were tested extensively in preparatory tests for the 1980 census—the Rural Listing Test, the Travis County, TX, Pretest, the Data Collection Unit Test, and the Rural Relist Test (see ch. 2)—and final prelist procedures were formulated based on the results of these tests. The procedures received a formal run-through in the dress rehearsal census in Richmond, VA. The major improvements over the 1970 procedure were the use of a set method of travel (canvassing clockwise around every numbered block, in a systematic fashion) and instructions to knock on every door.

After training, each enumerator was assigned to list one or more specified ED's, using a map for the ED and the Prelist Address Register (form D-101; see app. 3C for format) as the basic tools. The enumerators' instructions were in the back of the register and listed the following duties.

1. Canvass each assigned ED by systematically traveling all streets, roads, paths, etc., and look for every place where people live or could live.
2. Knock on the door of every place where people live or could live, and obtain the mailing address for each living quarters, whether occupied or vacant. If no one is home, obtain the address by inquiring of neighbors, landlords, etc., or by observation.
3. List the mailing address of each living quarters in the address register. For occupied living quarters, also record the full name of the occupant who owns or rents the living quarters.¹¹
4. Indicate the location of each living quarters on the ED map by making a spot and writing the serial number beside it.
5. Print a location description in the address register for each address that does not have a house number and street name (i.e., rural-route addresses).¹¹
6. Record the number of living quarters at each basic street address.
7. List each special place in the ED on a yellow special-place address listing page, and spot its location and control number on the ED map.
8. Update the map as necessary by drawing in new streets, deleting nonexistent streets, and correcting street names, types, directional prefixes and suffixes, etc.

The enumerators were instructed to canvass one block at a time in a clockwise direction, listing only the living quarters—both housing units and group quarters—on their right, including interior roads. They were to look for or inquire about concealed or unusual living quarters. If the enumerator could not obtain an

adequate mailing address during the first visit, either by inquiry or observation, he/she was instructed to list as much information as possible and to make one return visit to complete the listing.

Quality control—The enumerators' work was given a "first review" and a "final review" by a crew leader. The first review was conducted 3 or 4 days after an enumerator began listing in an ED, to see whether the enumerator was canvassing systematically, map-spotting, entering complete mailing addresses and special places, and meeting the production level of at least 60 listings per day in rural areas and 100 per day in urban areas. The failure of enumerators to meet production levels was a common problem throughout the enumeration. Some of the reasons were that many did not work the prescribed 8-hour day, there were high turnover rates, and not enough time was allotted for training enumerators to use the census maps. (Problems with the legibility of the maps are discussed above.)

In the final review, which was conducted when an enumerator completed an ED, the crew leader answered 13 specific questions about whether the address listing pages and ED map had been completed as instructed. The ED assignment failed and corrective action was taken if there were one or more "No's." Also as part of the final review, the enumerators' work underwent a quality control (QC) procedure performed by a prelist QC enumerator. The QC enumerator made an advance listing of 24 addresses (usually 6 in each of 4 blocks marked on the ED map by the crew leader) in each ED designated for QC. When the listings of the regular enumerator were completed, they were compared to the QC enumerator's "listing and matching record." If the regular enumerator's list differed from the QC enumerator's by no more than one address, the ED passed the quality control. But if two or more addresses were not listed by the regular enumerator, the QC enumerator checked the possible errors in the field. Any missing addresses were added to the address register. If it was verified that there were two or more errors, the address register for the ED in question was given to another regular enumerator to be "repaired" and the ED was recanvassed. If four or more addresses had been missed by the original enumerator, he/she could be dismissed.

Organization and staffing—There were 26 prelist offices in addition to the 12 regional census centers (from which prelist operations were also conducted) for a total of 38 sites. (See app. 3D for locations.) Space requirements ranged from 1,700 to 2,800 square feet, with an average size of about 2,200 square feet.

Each office was under the supervision of a prelist office manager. Some of the managers were hired locally and some were Bureau regional office employees. A senior office clerk was in charge of payroll and personnel matters and was assisted by a number of office clerks. Office processing operations, which included preparing field maps, delineating field assignments, checking in and controlling completed assignments, and shipping materials to the keying centers, were under the control of an office operations assistant, aided by numerous clerks. The actual listing and other field operations were under the supervision of field operations assistants (FOA's). Each FOA generally was assigned 10 crew leaders, who were responsible for training and supervising about 13 enumerators each. There was one QC enumerator for every two crew leader districts.

¹¹In addition to post office, State, and ZIP Code, an adequate mailing address in areas where mail delivery was by house number and street name included: full name of the occupant who owned or rented the living quarters (if occupied), house number, and apartment number or designation. In areas of rural route delivery, an adequate mailing address included: full name of the occupant who owned or rented the living quarters (if occupied), route number, box number (if applicable), and a location description of the living quarters.

Chapter 3. Geography, Addresses, and Questionnaire Printing and Labeling

The most serious problem in recruiting and hiring prelist workers was the delay in the operations because, as mentioned above, it was not possible to tell candidates exactly when a job would begin. To recruit job candidates, the Bureau relied on State employment services, free advertising, and, to a lesser extent, paid advertising. In order to qualify, an applicant had to pass a written test, which was longer than that used to hire field staff in 1980 but similar in content.¹² During the first 2 months, test score rankings of qualifying applicants were used as the basis for hiring. For the remainder of the operation, random selection was made from the pool of applicants who had passed the qualifying test.

The number of positions and the pay rates for the various job titles were as follows.

Position	Number	Hourly wage ¹³ (dollars)
Office manager	37	8.45
Field operations assistant	240	5.65
Office operations assistant	37	5.65
Senior office clerk	37	4.30
Clerk	865	3.35
Crew leader	2,395	4.25
QC enumerator	1,198	3.85
Enumerator (hourly rate)	(as needed)	3.60
Enumerator (piece rate)	28,750	per listing 0.20 per mile, time en route 0.29

The enumerator piece rates were the same in all parts of the country, and were designed to yield a targeted hourly wage of \$3.60. Some enumerators were paid hourly to do "cleanup" work. All employees were paid biweekly.

Toward the end of prelist, a bonus system was instituted to help increase production. In urban areas, enumerators who listed 1,000 or more addresses in a 2-week pay period received a \$50 bonus; in rural areas, the same amount was paid for listing 600 addresses in a pay period. Use of the bonus system was at the option of each region, and it was not used in all areas. There was no evaluation of the efficacy of the system.

Keying—Prelist keying was conducted in four sites—Laguna Niguel, CA, New Orleans, LA, Jeffersonville, IN, and Kansas City, KS. Keying began in early June 1979 and was completed in January 1980.

When shipments of address registers from the field offices reached the processing centers, clerks verified the completeness of each shipment. As the individual registers were checked in, they were inspected and any damage was repaired. Prior to keying, the registers were stored in a secure "library." As a first step in the keying flow, the registers went through a clerical screening unit where the ED numbers on the registers were verified as "valid" (i.e., in the MRF), the control counts of addresses in the registers were checked, and the handwritten entries were screened to see whether they were readable and keyable. Any problems identified were resolved in the screening unit or referred to a special problem-solving unit.

The addresses were keyed, matched to a preliminary version of the precensus MRF to determine the validity of ED and block numbers, and put onto an output tape that was sent to Bureau

headquarters for computer processing. Diaries identifying any problems found in the keyed output were returned to the processing sites for resolution. Once the output tape for an address register was accepted through the headquarters computer processing, the original handwritten prelist address register could be packed for shipment to the appropriate district office for use as a reference in 1980 field operations. The result of the headquarters processing was a computer-generated, printed address register, the pages of which were assembled at the processing sites.

The slowness of the listing operation (which caused delays in keying), the need to ship the keying stations to the regional census centers in the fall of 1979 (where they would be installed for use in the 1980 field operations), and the competing demands on the Bureau's computer capacity raised the serious possibility that the keying of prelist addresses might not be completed. This would have required the use of hand-addressed registers and the hand-addressing of questionnaires for the mailout for each ED not keyed and would have made the work in the 1980 district offices more difficult.

Several steps were taken to ensure that keying would be completed. First, the shipment of keying stations to the regional census centers was postponed. Second, in a move to accelerate the operations, keyers were instructed to stop keying certain information in the prelist address registers. The keying of location descriptions for housing units in areas with rural route delivery was stopped. The location description would have aided a followup enumerator in finding a housing unit for which no questionnaire had been returned. There had been problems with keying the location description in any case—the descriptions were to be keyed into a 35-character field, and the keyers were instructed to key the first 35 letters of the descriptions. Thus, if enumerators had written lengthy descriptions, parts would not have been keyed.

As another speed-up measure, clerks were instructed to stop keying household names for house number/street name addresses. However, this instruction was mistakenly applied, in some cases, to names for rural route addresses. Names of householders are an important element of an address in rural route delivery areas and, where the names were not keyed, enumerators had difficulty in determining which housing units had returned questionnaires.

Because of the shortened time for keying, many of the computer-generated registers used in the district offices after Census Day did not have householders' names or housing-unit locations where street addresses were deficient, complicating both mail delivery and followup. This situation, together with concerns about the prelisting operation's quality and completeness, led the Bureau to authorize a recanvass of a number of prelist areas during the vacancy/delete followup (unit status review; see ch. 5). This involved traveling all of the ED's, comparing the addresses and housing-unit locations with the address registers and the maps, correcting the records as necessary, and enumerating by personal interview every household and housing unit that the prelisting operation had missed. This work began in late June but was discontinued in August because of time and budget constraints.

The original handwritten prelist address registers were sent to 1980 census district offices, along with the computer-generated address registers. They served as references, par-

¹²The supervisory test was cut from 2½ hours for the 1979 prelist to 1 hour in 1980; the nonsupervisory test, from 1½ hours to 1 hour. (See ch. 5 for tests and other selection aids.)

¹³Pay rates were increased on Oct. 1, 1979, by \$.25 to \$.60 for each position.

ticularly in cases where the location descriptions or names had not been keyed or in the few areas where the addresses were not keyed at all.

Address and Geographic Reference Materials for Field Offices

Once the computerized files containing TAR and prelist addresses and the precensus MRF were ready, various products essential to the work of the census field offices could be computer-generated. These products, which included address registers, geographic aids, and address labels, were produced in a 4-month period from November 1979 to February 1980.

One or more master address registers were produced for each of 277,000 ED's in mail census areas.¹⁴ The registers contained a listing for each residential address known to be in an ED at this stage of the census—40.2 million addresses in TAR areas and 34.8 million in prelist areas. The address register pages were printed and assembled in the Bureau's Jeffersonville facility, whence they were shipped to the field offices. (Master address register cover and listing pages are reproduced in App. B, "Data-Collection Forms," of this publication series.)

A number of computer-generated geographic aids also were produced for use in the census field offices. One of these was the Block Header Record (form D-327), produced by meshing the MRF with GBF/DIME files; it was used to assign geographic codes manually to those addresses added in various operations subsequent to computer geocoding. Another tool was the Preliminary ED Directory (form D-3018), which was used to plot ED boundaries, check geographic relationships in the field, and correct maps. This directory showed the census tract and block numbers and the expected number of housing units for each ED. It was produced using the precensus MRF; as the MRF went through its various revisions, similar updated listings were generated. (Other geographic aids used in the field offices are discussed in ch. 5.)

Address label tapes, containing the 75 million addresses that were printed in the address registers were produced. These tapes were sent to contractors who produced address labels to be affixed to census questionnaires.

Address List Work in the Field Offices

One of the major jobs of the field offices from the time they opened in January 1980 until Census Day was the enhancement of the master address registers. Through a series of updates conducted by census enumerators and the USPS, addresses were added (or, less often, deleted) and corrections were made to the registers. Each of these operations is outlined below.

"Yellow card" operation—As mentioned above, the Bureau attempted to geocode all TAR addresses by computer, but it could not code about 6 million of them to the correct ED and block. Each uncoded address was printed on a form D-374, ED and Block Followup Card, which, being yellow, was called a "yellow

card."¹⁵ Since these addresses were not coded to ED and block, they were not printed into the address registers and questionnaires were not labeled for them. Because of the unexpectedly large number of "yellow cards," some preliminary coding was attempted in the processing centers and regional centers before shipping the cards to the district offices. In late January and February 1980, the district offices used local knowledge and geographic references, such as a list of records deleted during the GBF/MRF match, to try to geographically code the yellow cards. If a yellow card could not be coded in the office, it was sent to the field to be coded by an enumerator who attempted to locate the address on a census map. Once the yellow cards were coded to the correct district office, ED, and block, office clerks checked to see whether the addresses were already in the address registers and, if not, added them. For each address added to the registers, a questionnaire mailing package was addressed by hand and sent to the appropriate post office for the March 5 casing check. The district offices processed 6.1 million yellow cards, 247 percent more than the number originally estimated. Of the 6.1 million, clerks geocoded 3.9 million by reference to maps, and enumerators had to check the remaining 2.2 million by personal visit.

Precanvass—In February and March 1980, census enumerators working out of the district offices undertook an update of census address lists in TAR areas only, in an operation called "precanvass." Precanvass was originally scheduled to occur prior to the "yellow card" operation, but had to be postponed due to delays in completing maps and in compiling address registers. When the district offices opened in January, they received a master address register and a precanvass address register (form D-103) for each ED in the office's area. The master address register contained an address, including apartment designations (Apt. 101, 102, etc.) in multiunit structures, for each known geocodable residential living quarters in the ED. The precanvass address register was produced at the same time as the master address register and contained only basic street addresses (house number and street name); for multiunit structures, it showed the number of units at the address rather than listing each unit separately. For quality control purposes, 5 percent of the known addresses were omitted.

During precanvass, enumerators traveled every street in each ED to:

1. Verify that the basic address for every residential structure located in the ED was listed in the precanvass address register and coded to the correct block, and add to the precanvass address register any basic addresses that were not listed. If there were several units at the added address, the designation of each was to be recorded.
2. Verify that the number of housing units given for each basic address was correct. If a multiunit structure was found to contain *more* units than were listed in the precanvass address register, the enumerator recorded the apartment designations for *all* units.
3. Delete nonresidential and nonexistent addresses, and addresses that should have been listed in another ED.

¹⁴The number of ED's increased during the census due primarily to splits necessitated by late boundary changes. There were 28,000 precensus ED's in conventional areas, for a total of 305,000 precensus ED's. Blank address registers with the appropriate district office and ED labels were assembled for the conventional ED's.

¹⁵Not to be confused with the cards used in the "nixie" check (form D-700C), which also were yellow.

Once the field work was completed, the prec canvass address registers were returned to the district office where additions and corrections were made to the master address registers.¹⁶ Questionnaires were addressed for housing units added to the registers and sent to the appropriate post office. Precanvass was not completed in many areas in time for the casing check, as originally planned.

The precanvass operation had been tested in the Travis County, TX, Camden, NJ, and Oakland, CA, pretests and was used in the dress rehearsal censuses in Richmond, VA, and lower Manhattan, NY. As a result of the tests, it was believed that precanvass would significantly improve the coverage of housing units in the census. (See ch. 2 for a discussion of the pretests and dress rehearsals and ch. 9 for 1980 census operations evaluation.)

Casing and Time-of-Delivery Checks

Census questionnaire mailing packages with computer-generated address labels were sent from the mailing-package assembler to post offices in February 1980 for the casing check on March 5, 1980; where possible, so were the questionnaires that were hand-addressed in the district offices for addresses added to the registers from precanvass and "yellow cards." In the casing check, which unlike precanvass and the "yellow card" operation was performed for both TAR and prelist areas, postal carriers sorted addressed questionnaires into the proper slots in their delivery cases and determined whether there was a questionnaire mailing package for each residential address on their routes; they were not supposed to deliver the questionnaires at that time. If there was a housing unit address within their delivery area for which there was no questionnaire, they filled out a blue card, Form D-701, "Post Office Report of Missing Delivery."¹⁷ If there were two or more mailing pieces for the same address, one of them was marked "Duplicate" and was returned to the census office, along with questionnaires that were "Undeliverable"—those with incomplete addresses or those addressed to nonexistent housing units—and the blue cards. Appropriate actions were taken in the district offices to update the master address registers based on the results of the post office check, including determining the correct ED and block, and adding to the registers addresses on blue cards that were not already listed. Addresses that belonged in another ED, were nonexistent, or were for nonresidential structures were deleted.

The final post office check before Census Day was conducted on March 28, 1980, at the time the questionnaires were delivered, and was called the "time of delivery" check. Questionnaires had been addressed and sent to the post offices for addresses added (on blue cards) during the casing check. The procedures for the time-of-delivery check were essentially the same as for the casing check, except that the questionnaires were actually delivered. Again, the master address registers were updated in the census offices based on the results of the time-of-delivery check and, when addresses were added, questionnaires were addressed and mailed out. The district offices reported processing 7.3 million blue cards, 27 percent more than originally estimated.

¹⁶Conducting the "yellow card" operation prior to precanvass meant having to match precanvass "adds" to all the addresses added to the registers from yellow cards, which was difficult and complicated.

¹⁷This card was similar to the blue card used in APOC, but with a different name and form number.

The post-enumeration post office check (PEPOC), which verified the enumerators' coverage in "conventional" areas, is discussed as part of the field operation (see ch. 5).

QUESTIONNAIRE PRINTING AND LABELING

Questionnaire Printing

Over 2,500 different types of forms were designed and printed for use in the 1980 census. The most important of these were the short- and long-form questionnaires that were delivered to households on March 28, 1980. This section will detail the printing of these two forms only. (See app. B to this publication series for the description and numbers of data-collection forms.) In the remainder of this section, the short- and long-form questionnaires will be referred to by their form numbers—D-1 and D-2, respectively.

All forms were designed by Bureau staff, with the exception of the covers for the D-1 and D-2 questionnaires, which were designed by a private consulting firm. Bureau studies showed that the covers of the questionnaires might play an important part in getting people to fill out and mail back their forms. All forms used for collecting data or informing the public had to be approved by the Office of Management and Budget (OMB).

Printing of the D-1 and D-2 questionnaires was a massive undertaking, as more than 170 million forms were needed for census operations. In addition to the requirement for large quantities, the forms had to meet certain technical specifications so that, when microfilmed by high-speed cameras, they would be readable by the Bureau's film optical sensing device for input to computer (FOSDIC) machines. For instance, paper had to be of a certain weight, opacity, brightness, thickness, porosity, the ink just the right density, and the print aligned correctly, etc.

The Census Bureau, through the Department of Commerce, submitted printing specifications to the Government Printing Office (GPO) to procure printing and binding contracts for the forms. The GPO mailed the specifications to 152 printers nationwide in November 1978 and bids were opened at GPO in December 1978. Only 48 responses were received, of which 6 were seriously considered. A primary reason so few printers responded was that, due to the Bureau's restrictive paper specifications, paper mills were not able to allocate sufficient quantities of acceptable paper. A further problem was that some paper mills were on strike, and paper was in short supply. Two printers were awarded contracts to print most of the D-1's and one printer was awarded the contract for the D-2's and the remainder of the D-1's. After the contracts were let, the printers had difficulty in getting paper that met specifications from their suppliers. As a result, the GPO revised the paper specifications (with Bureau approval) so that they were less restrictive. Two additional contracts were awarded late in the printing schedule because of D-2 production problems, and additional forms were ordered when the Bureau increased its estimate of the number of housing units and the number of questionnaires needed in late 1979.

The target date for delivery of questionnaire negatives to the printers was mid-February 1979 and for completing printing, October 1, 1979. Sufficient quantities of questionnaires had to be produced in time to begin assembling them into mailing packages (or for inclusion in field-use kits) and address-labeling the packages for the March 5, 1980, casing check.

POST OFFICE CASING CHECK

Reprinted by permission of the Chicago Tribune



Final questionnaire negatives were supplied to the printers about a month late, in mid-March, due to delays in the clearance of the final content of the forms. Further, the printers all experienced initial problems and delays in their first shipments of questionnaires to the mailing-package assemblers because of difficulty in acquiring sufficient paper, with the FOSDIC circles on the printing plates, and with the bindery operations (where the D-2 form pages were stapled together). Delayed production and the rejection of forms that did not meet quality standards were continuing problems (particularly with the D-2's) throughout much of the 11-month printing period. The greatest problem was with the Bureau's paper opacity requirement, which ultimately had to be relaxed to reduce the amount of reflectance.

Quality control over the printing of the questionnaires was carried out by Bureau personnel from samples of printed forms drawn by the contractors. The GPO rejected the Bureau's request to allow its own staff to pull the samples at the printing locations and, thus, the accuracy of the samples was a matter of concern. The Bureau resampled the forms from one contractor. The samples amounted to about 1 out every 2,000 D-2 and 1 out of every 4,300 D-1 forms, and was chosen by taking two forms at random from every fifth carton of D-2's on a packing skid and two sets of two consecutive forms at random from every fifth carton of D-1's. All forms selected from a single skid constituted a quality-control work unit, which consisted of approximately 20 D-2's or 40 D-1's. The samples were sent to the Suitland headquarters where they were examined by Bureau personnel. If no errors were detected, the skid was accepted. If one form was in error, the contractor had the option of taking a second sample from the skid in question; however, since the skids were already packed, stacked, and tied by this time, resampling posed logistical problems and it was more convenient for the printer to treat the skids as rejects. If the original sample had contained two or more questionnaires with errors, the skid was rejected in any case.

If a skid was rejected, the contractor had the option of either reprinting forms equal to the quantity on the skid or isolating and destroying all defective forms on the rejected skid. In the latter case, the rejected skid was resampled and the Bureau had the option of having a representative visit the printing plant to observe the resampling. The resample consisted of three questionnaires pulled at random from each carton on the rejected skid.

In order to speed up the turnaround time from the 3 days experienced in the early months of QC to 1 day, the Bureau set up QC stations at headquarters, in Laguna Niguel, CA, and in New York city.

Under the original schedule, all D-1's and D-2's were to have been printed and shipped to the mailing-package assemblers or to the Bureau's processing centers for kit preparation by October 1, 1979; however, by that time only half the questionnaires had been printed. Three-fourths had been printed by the first week in November, but the last forms were not completed until the last week of February 1980.

In all, about 172.5 million questionnaires (133.5 million D-1's and 39 million D-2's) were received from the printer.

Mailing-Package Assembly and Labeling

Assembly and labeling of the questionnaire mailing packages were performed by two contractors and several subcontractors

in eight locations throughout the country. Contracts were awarded in late April and early May 1979. Assembly could not begin until sufficient quantities of all the mailing-package components were shipped to the contractors. The short-form mailing package consisted of a D-1, an instruction booklet (D-3), and a return envelope (D-8), enclosed in an outgoing envelope (D-6). The long-form mailing package contained a D-2, an instruction booklet (D-4), and a return envelope (D-8), all in an outgoing envelope (D-7). Both the return and outgoing envelopes had windows through which the questionnaire labels could be read.¹⁸

Assembly of short-form packages began in mid-July and of long-form packages, in late August, about 2 months behind schedule. In all, about 94 million packages were machine-assembled (74.6 million short-form and 19.3 million long-form) in the following time frame.

Percent assembled	Short forms	Long forms
25	September 7, 1979	October 19, 1979
50	November 9, 1979	December 7, 1979
75	December 28, 1979	January 18, 1980
100	March 4, 1980	February 29, 1980

In addition to arriving late, many of the questionnaires the assembly contractors received were warped or otherwise damaged due to loose packing or skid overloading at the printing plants. There were also problems with some of the purchased envelopes: No glue, incorrect ink color, misprinting, or misaligned folding, etc.

Labeling began in late November for short-form packages and mid-December for long-form packages. Figure 3 illustrates an address label. The labels contained an address with house number, street name, apartment designation (where applicable), post office, State, and ZIP Code, and the following information: District office (DO) code, ED number (A1), the number of housing units at the address (A2), block number (A4), form type (A5), and questionnaire serial number (A6). The return address of the appropriate census district office was also shown along with a telephone number to call for assistance in filling out the form.


The labels were printed and affixed by the same contractors who assembled the mailing packages. Label tapes, provided by the Bureau, were generated by SMSA on a flow basis as all the geocoding and ED structuring for an SMSA were completed. Delays in completing these tasks affected the delivery of label tapes and postponed the start of labeling.

Because addresses compiled by the Census Bureau are confidential, the Bureau issued strict guidelines for the storage, handling, and disposition of the address labels by the private contractors. About 75 million packages were labeled—60.4 million short-form packages and 14.8 million long-form packages. The schedule was as follows:

Percent labeled	Short forms	Long forms
25	January 11, 1980	January 18, 1980
50	January 25, 1980	February 1, 1980
75	February 8, 1980	February 8, 1980
100	February 29, 1980	February 29, 1980

¹⁸Mailing packages for Spanish-language questionnaires and various experimental forms were also assembled by the contractors. There were no assembled mailing packages for conventional census areas; here, Advance Census Reports (D-13), which were short-form questionnaires with instructions attached, were delivered to housing units.

Figure 3. Labeled Questionnaire in Outgoing Envelope



BUREAU OF THE CENSUS
Washington, D.C. 20233
D-6
OFFICIAL BUSINESS
RETURN POSTAGE GUARANTEED

↓ **TO** ↓

DO	A1	A2	A4	A5	A6
2799	0258	1	302	S	0141

611 GRAND AV
ANYTOWN MA 00100

0201

US CENSUS DISTRICT OFFICE
ANYTOWN MA 00100
FOR HELP CALL 765-4321

POSTAGE AND FEES PAID
U.S. DEPARTMENT OF COMMERCE
COM-202
THIRD CLASS BULK RATE

1980 Census of the United States

- This envelope contains your official Census form
- Please fill it out and mail it back on Tuesday, April 1

**PARA PERSONAS DE HABLA HISPANA:
(FOR SPANISH-SPEAKING PEOPLE)**

Este sobre contiene su cuestionario oficial del Censo en inglés. Si usted desea una versión en español, vea las instrucciones en la cubierta del cuestionario que se le incluye.

As with the questionnaire printing, a quality-control operation was instituted to assure that the mailing packages were assembled and labeled properly. Checks were made to see that the packages contained the correct contents, that the label printing was readable, and that the labels were centered in the windows of the outgoing envelopes and right side up. About 2 million packages prepared at one of the sites had to be repaired under Census Bureau direction because the labels straddled the window and would be torn when the householder took the questionnaire out of the envelope.

The USPS picked up the labeled questionnaires and distributed them to individual post offices in time for the March 5, 1980, casing check. The unlabeled mailing packages (about 18.7 million) were sent to the Bureau's processing centers for distribution to district offices. These packages would be hand-addressed and sent to addresses that were added to the address registers during various operations conducted in the district offices before Census Day.

Appendix 3A. Geographic Areas

Table 1. United States Geography

(Includes the 50 States and the District of Columbia; for Puerto Rico and outlying areas, see ch. 11)

Area	Number	Area	Number
Counties	13,139	American Indian reservations	*278
Minor-civil-divisions-equivalent entities	35,195	Subreservation areas for 21 reservations	228
Minor civil divisions	24,906	Alaska Native villages	209
Census county divisions	5,512	Census tracts, includes 306 crews-of-vessels tracts	43,226
Unorganized territories	273	In 1980 SMSA's, includes 286 crews-of-vessels tracts . .	*40,322
Places not in any MCD	4,504	Outside 1980 SMSA's, (191 counties or county equivalents and 28 partial counties), includes 20 crew-of-vessels tracts	*2,904
Places	22,529	Block numbering areas includes 19 crews-of-vessels areas . .	3,315
Incorporated places	19,097	Counties with BNA's	901
Census designated places (CDP's)	3,432	Block groups	154,456
Congressional districts of the 98th Congress	*435	Block group records, including splits of BG's in data files .	195,564
Metropolitan areas:		Census blocks	2,458,070
1980 SCSA's	16	Census block records, including splits of blocks in data files	*2,521,130
1980 SMSA's	318	Block Statistics Program (outside urbanized areas):	
SMSA counties, including 31—part	730	Participating areas	1,215
1980 central cities	429	Regular program	548
As of June 30, 1985:		Contract program	667
MSA's ¹	260	Enumeration districts	99,135
CMSA's ²	20	Neighborhood Statistics Program	
PMSA's ³	71	Participating jurisdictions	1,252
Metro counties, including 27—part	748	Neighborhoods	27,848
Central cities	516	School districts	16,075
Urbanized areas (UA's)	366		
Central cities	431		
Counties with UA's, including 620—part	657		

¹Includes La Paz County, AZ, and Cibola County, NM, which were established after 1980.

²Does not include the District of Columbia's nonvoting delegate.

³After the relationships between central urban core(s) and adjacent counties were analyzed on the basis of the 1980 census and a revised set of criteria, these areas were redefined and renamed. On June 30, 1983, SMSA's and SCSA's were redesignated as metropolitan statistical areas (MSA's), consolidated MSA's (CMSA's), and primary MSA's (PMSA's).

⁴Includes three areas that were jointly administered/claimed; does not include Minnesota Chippewa (whose landholdings comprised only tribal trust lands) or the historic areas of Oklahoma.

⁵Includes two split census tracts (one each in Maine and Vermont).

⁶For States in which MCD's were governmentally nonfunctioning, splits of block groups were based on places only; recognition of such MCD's increases records to 2,529,750.

Appendix 3A. Geographic Areas

Table 2. Number of Selected Geographic Areas

State	Counties ¹	MCD's/ CCD's ²	Places			Census tracts ⁴	BNA's ⁵	Block Groups ⁶		ED's ⁷	Blocks ⁸	
			Total	Incor- porated	CDP's ³			Total	Split		Total	Split
United States	3,139	35,195	22,529	19,097	3,432	43,226	3,315	154,456	195,564	99,135	2,458,070	252,313
Alabama	67	390	456	428	28	727	24	2,177	3,153	1,935	40,940	42,839
Alaska	23	37	294	143	151	53	8	199	218	942	3,316	3,330
Arizona	15	78	118	75	43	495	19	1,559	1,867	1,893	27,602	28,035
Arkansas	75	1,378	482	472	10	199	67	1,017	1,558	2,950	24,232	25,007
California	58	386	781	422	359	5,028	4	16,335	20,195	3,887	203,504	210,135
Colorado	63	208	291	266	25	607	65	2,392	3,025	1,292	38,227	39,094
Connecticut	8	169	119	33	86	791	0	2,320	2,590	395	30,048	30,074
Delaware	3	27	70	56	14	161	0	359	414	339	5,538	5,585
District of Columbia	1	4	1	1	0	183	0	580	591	0	4,620	4,620
Florida	67	293	704	391	313	1,837	16	6,372	8,560	2,869	134,338	137,809
Georgia	159	581	612	556	56	686	402	4,286	6,673	0	117,041	123,870
Hawaii	5	44	96	0	96	234	0	374	445	263	4,389	4,428
Idaho	44	170	200	199	1	77	31	447	542	1,742	8,095	8,239
Illinois	102	1,653	1,304	1,278	26	2,089	123	7,792	11,069	4,728	108,793	115,381
Indiana	92	1,008	580	565	15	970	54	3,340	4,328	2,941	55,926	57,409
Iowa	99	1,658	956	955	1	385	60	1,539	2,006	3,624	27,492	28,002
Kansas	105	1,548	629	625	4	333	89	1,466	1,757	2,860	29,185	29,539
Kentucky	120	474	449	425	24	431	47	1,492	2,040	2,184	19,548	20,296
Louisiana	64	488	365	301	64	713	53	2,417	3,062	2,264	41,483	42,189
Maine	16	535	112	23	89	210	6	380	410	1,445	5,888	5,894
Maryland	24	298	322	152	170	1,020	3	2,912	3,645	884	38,582	39,164
Massachusetts	14	351	213	39	174	1,199	0	4,857	5,232	852	65,340	65,398
Michigan	83	1,519	597	531	66	2,015	55	6,824	7,440	3,771	85,006	85,515
Minnesota	87	2,729	857	855	2	768	64	2,671	2,935	4,419	41,788	42,175
Mississippi	82	410	310	290	20	247	284	1,941	4,446	0	58,418	61,231
Missouri	115	1,348	943	933	10	731	67	2,996	4,086	3,483	44,993	46,437
Montana	57	192	139	126	13	63	70	597	759	1,331	11,449	11,750
Nebraska	93	1,288	535	534	1	180	44	935	1,147	2,577	18,159	18,506
Nevada	17	58	35	17	18	141	0	410	570	476	8,719	8,965
New Hampshire	10	259	62	13	49	175	19	483	518	572	8,068	8,073
New Jersey	21	567	462	333	129	1,708	0	6,227	6,543	677	91,692	91,772
New Mexico	33	130	128	95	33	211	31	903	1,065	1,558	17,994	18,195
New York	62	1,012	964	616	348	4,356	365	15,373	18,924	0	183,501	190,568
North Carolina	100	1,031	595	490	105	850	73	2,458	4,073	4,108	50,996	52,971
North Dakota	53	1,811	368	365	3	58	46	329	407	2,187	6,465	6,590
Ohio	88	1,542	1,011	939	72	2,319	92	7,656	9,484	3,434	98,363	101,221
Oklahoma	77	302	598	596	2	581	40	2,035	2,460	3,184	35,361	35,9123
Oregon	36	211	276	241	35	435	52	1,428	1,908	1,693	31,079	32,049
Pennsylvania	67	2,580	1,241	1,018	223	2,626	122	9,121	10,286	3,426	141,874	143,435
Rhode Island	5	39	28	8	20	220	0	870	939	0	15,951	15,963
South Carolina	46	294	381	265	116	502	30	1,498	2,224	2,828	27,951	29,185
South Dakota	66	1,417	318	312	6	54	38	326	380	2,296	7,795	7,899
Tennessee	95	462	379	331	48	710	71	2,368	2,970	2,819	43,069	43,994
Texas	254	863	1,169	1,112	57	2,580	151	10,096	12,321	5,606	184,315	188,394
Utah	29	91	239	222	17	235	70	974	1,358	739	14,910	15,604
Vermont	14	255	77	58	19	26	7	92	103	469	1,555	1,572
Virginia	136	496	340	229	111	1,065	231	4,092	5,520	0	71,701	72,923
Washington	39	245	355	265	90	777	72	3,038	3,965	1,495	53,303	54,550
West Virginia	55	310	273	230	43	280	15	710	1,063	1,477	12,780	13,115
Wisconsin	72	1,885	600	579	21	851	71	2,999	3,798	3,565	48,345	49,663
Wyoming	23	71	95	89	6	34	64	394	492	656	8,343	8,565

¹Includes county-equivalent entities, including cities that are independent of any county.

²Includes MCD-equivalent entities, including places that are independent of any MCD.

³Census designated places.

⁴Includes 306 crews-of-vessels census tracts; the total number of locally established census tracts is 42,920.

⁵Block numbering areas; includes 19 crews-of-vessels BNA's; the total number of "onshore" BNA's is 3,296.

⁶The total figure represents the number of unique block groups (BG's); many of these BG's are split in the 1980 census data files, and the number of such records is shown as the SPLIT figure.

⁷Enumeration districts; refers only to ED's tabulated in data-user files (i.e., excludes 211,542 ED's structured by the Census Bureau for internal operations in block-numbered areas and represented at the ED-level by block groups in data tabulations).

⁸The total figure represents the number of unique block numbers; many of these are split in the 1980 census data files, and the number of such records is shown as the SPLIT figure. For States in which all MCD's are governmentally nonfunctioning, splits of blocks are based on places only; recognition of such MCD's increases the total number of block records to 2,529,750.

POLITICAL AREAS

States

The following areas were recognized as States or State equivalents for 1980 census processing and publication: the 50 States, the District of Columbia, Puerto Rico, and 5 outlying areas—American Samoa, Guam, the Virgin Islands of the United States, the Northern Mariana Islands, and the Trust Territory of the Pacific Islands.¹ The 50 States and the District of Columbia constitute the United States. The Canal Zone, which had been enumerated in each census from 1920 to 1970, was not included in the 1980 census. This change was a result of a 1978 treaty between the United States and Panama, which went into effect on October 1, 1979, and provided for gradual Panamanian control over the Zone. A number of other American possessions—for instance, Johnston Atoll and Sand, Midway, and Wake Islands—were either uninhabited or had counts supplied for them by other Federal agencies and were not part of the enumeration. The Swan Islands, for which data had been similarly obtained in 1970, were ceded to Honduras in 1972 and, were not included in the 1980 census.

Counties

In 48 States, the primary divisions are termed counties. In Louisiana, these divisions are called parishes. In Alaska, which has no counties, the equivalents were the organized boroughs (which cover part of the State) together with the “census areas” (for the balance) developed cooperatively for general statistical purposes by the State and the Census Bureau. Virginia had 41 cities that were independent of any of its counties and thus constituted county equivalents. Maryland, Missouri, and Nevada each had one independent city. The part of Yellowstone National Park in Montana was treated as a county equivalent. The District of Columbia and Guam had no primary divisions, and the entire area of each was considered equivalent to a county for publication purposes. American Samoa, the Virgin Islands, the Northern Mariana Islands, and the remainder of the Trust Territory all were composed of districts or islands; Puerto Rico was divided into municipios. Connecticut and Rhode Island did not have organized county governments; in these two States, the historic county areas were used for data presentation.

In all, there were 3,137 counties and county equivalents in the United States.² There were 94 such areas in Puerto and the outlying areas.

Minor Civil Divisions

The term minor civil division (MCD) was applied to organized subcounty governments or nongovernmental units administered by counties in 29 States and the District of Columbia. MCD's were recognized for North Dakota in 1980, unlike 1970 when census county divisions (CCD's) were used. The other States with MCD's were: Arkansas, Connecticut, Illinois, Indiana, Iowa, Kansas, Louisiana, Maine, Maryland, Massachusetts, Michigan,

Minnesota, Mississippi, Missouri, Nebraska, Nevada, New Hampshire, New Jersey, New York, North Carolina, Ohio, Pennsylvania, Rhode Island, South Dakota, Vermont, Virginia, West Virginia, and Wisconsin.

The MCD's had various designations: townships, towns (in New England, New York, and Wisconsin), precincts, districts, wards, plantations, Indian reservations, grants, purchases, gores, locations, or quadrants (in the District of Columbia). In some States, all incorporated places also were treated as MCD's because they were not legally part of any MCD. In other States, incorporated places were subordinate to or part of an MCD. In several States, the pattern was mixed.

MCD boundary changes between 1970 and 1980 were quite numerous in several States—Arkansas, Louisiana, Maryland, Mississippi, Nebraska, Virginia, and West Virginia—as well as in Kansas, Ohio, and Wisconsin, where municipal annexations take territory from MCD's. There were varying numbers of changes in other States. It is estimated that, overall, about 25 percent of all MCD's experienced some boundary changes in the 1970's; many were minor adjustments.

A change for 1980 was that MCD data were presented in the printed reports for the New England States, New York, New Jersey, Pennsylvania, Michigan, and Wisconsin to the same extent as for incorporated places in other States. This policy had been applied only to the New England States in 1970. The decision for 1980 was made because the towns of New York and Wisconsin and the townships of New Jersey, Pennsylvania, and Michigan were general-purpose governments that possessed powers similar to many incorporated places.

Several types of units were recognized as MCD's in Puerto Rico and the outlying areas: in Puerto Rico, ciudades, pueblos, and barrios; in Guam, election districts; in the Virgin Islands of the United States, census subdistricts; in American Samoa, counties; in the Northern Mariana Islands and the remainder of the Trust Territory of the Pacific Islands, municipalities.

In eight States (Arkansas, Iowa, Kansas, Maine, Minnesota, North Carolina, North Dakota, and South Dakota) and the Trust Territory of the Pacific Islands, some areas were not included in any MCD recognized by the Census Bureau. Each such separate area of “unorganized territory” was treated as one or more subdivisions and given a name by the Bureau.

In all, there were about 29,700 MCD's (including about 4,500 independent incorporated places) in the United States.

In 20 States, data were tabulated for CCD's instead of MCD's and, in Alaska, by census subareas. (See Statistical Areas.)

Incorporated Places

Incorporated places recognized in the census reports were incorporated under the laws of their respective States as cities, boroughs, towns, and villages, with the following exceptions: boroughs in Alaska and New York, and towns in the six New England States, New York, and Wisconsin. These exceptions were recognized as MCD's or, in Alaska, as county equivalents. Hawaii was the only State with no incorporated places recognized by the Census Bureau.³ The towns in the Virgin Islands and the villages in American Samoa are not incorporated.

¹The Northern Mariana Islands were legally part of the Trust Territory of the Pacific Islands at the time of the census, but were treated separately for purposes of collection, tabulation, and presentation of data.

²Except where noted, the number of geographic areas apply only to the United States, and does not include Puerto Rico and the outlying areas.

³In agreement with the State of Hawaii, the city of Honolulu, which is coextensive with the county of Honolulu, was not recognized for census purposes.

Appendix 3A. Geographic Areas

About 68 percent of all incorporated places of 2,500 people or more had boundary changes in the 1970's, as did 37 percent of smaller places, for an overall percentage of 46. For the 1980 census, there were about 19,100 incorporated places in the United States.

American Indian Reservations

The Bureau published data in the 1980 census for 275 American Indian reservations that had legally defined boundaries, based on information supplied by the BIA for Federal reservations and by State governments for State reservations. In addition, census data were tabulated for three areas comprising reservation land jointly administered and/or claimed by two reservations. Federal and State reservations were located in 33 States and many crossed State, county, MCD/CCD, and place boundaries. In addition, the Oklahoma historic Indian reservations area and the lands of the Minnesota Chippewa tribe were identified on the maps and the MRF, but were not reported in the standard series of 1980 census publications. Data were published for 115 reservations in 1970.

American Indian Subreservation Areas

Subreservation areas were identified for the 1980 census by tribal governments or the BIA. Data for these areas were not published, but were made available through a special tabulation. A total of 228 subreservation areas were identified for 21 reservations; 184 were entirely located on the reservations, 8 were located partially on and off the reservations, and 36 were located entirely off the reservations. Subreservation areas were not recognized in previous censuses.

American Indian Tribal Trust Lands

Tribal trust lands were identified for the 1980 census by the BIA. Data for these areas were not published, but were made available through special tabulations. Tribal trust lands were not recognized in previous censuses.

Alaska Native Villages

The Bureau published data for 209 Alaska Native villages recognized under the Alaska Native Claims Settlement Act, Public Law 92-203. The State of Alaska reviewed and updated the list of these villages. Alaska Native villages were not recognized in previous censuses.

Congressional Districts

Data were published in the *Advance Reports*, PHC80-V, for the 435 congressional districts based on their boundaries at the time of the 1980 census (the 96th Congress, 1979-81). These boundaries also were in effect for the 97th Congress (1981-83). On December 31, 1980, the Director of the Census submitted to the President, through the Secretary of Commerce, the official State population totals and the number of seats in the House of Representatives to which each State was entitled on the basis of the 1980 census results. In February and March 1981, small-area data were delivered to the States for use in redrawing boundaries (see Election Precincts). Districts were redrawn in most

States in 1981 and 1982 so that the districts for the 1982 elections (the 98th Congress) would have nearly equal populations. After the congressional district boundaries were redrawn, the Bureau tabulated data for the new districts; these appeared in the series of reports PHC80-4, *Congressional Districts of the 98th Congress*, and on summary tape files 1D and 3D.

Election Precincts

Election precincts (also called election districts or voting districts) are areas defined by State and local governments for election purposes. Under a cooperative Census Bureau/State program and in accordance with Public Law 94-171, the Bureau, for the first time, provided data for 36,000 election precincts in 23 States that participated in the program. Other States could aggregate block data on their own to create election precinct statistics or use standard census geographical areas to meet their redistricting needs. (See Ch. 8, "Data Products and Dissemination," for more detail on the Public Law 94-171 data program.)

Neighborhoods

Another new type of area included in census tabulation plans was the neighborhood. The Neighborhood Statistics Program was developed to assist localities that wanted statistics for recognized subareas, generally called "neighborhoods." The guidelines for the program were first published in the *Federal Register* in November 1979, but changes relating to cost and coverage made it necessary to revise the guidelines several times; the final ones were issued in May 1982. Although the program was originally for municipalities, it was later extended to nonmunicipal areas covered by census blocks, specifically unincorporated parts of counties as well as towns and townships in the 11 States where these jurisdictions had general-purpose governments—Connecticut, Maine, Massachusetts, Michigan, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, and Wisconsin.

While the primary purpose of the program was to provide data for neighborhoods with citizen participation groups, data also were presented for traditionally recognized neighborhoods where no formal citizen participation system existed. The neighborhoods had to be officially recognized (by the locality), have nonoverlapping boundaries, and cover most of the area of the governmental jurisdiction. The participating localities were responsible for the work and expense of completing a neighborhood block-equivalency listing, which defined neighborhoods in terms of census geographic areas. The Census Bureau provided tabulations to the localities without charge. (See Ch. 8, "Data Products and Dissemination" for more detail on the Neighborhood Statistics Program.)

STATISTICAL AREAS

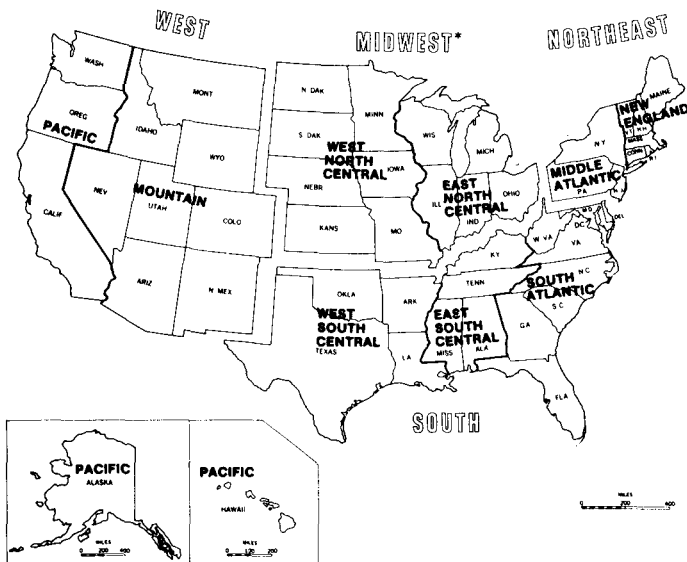
Regions and Divisions

The 50 States and the District of Columbia have been grouped into nine divisions, with four to nine generally contiguous States in each, since the 1910 census. The makeup of the divisions has not changed since then, except for the addition of Alaska and Hawaii, which are part of the Pacific Division in the West Region

Appendix 3A. Geographic Areas

and are the only noncontiguous States. Since the 1950 census, data also have been reported for four regions (from 1910-1940, there were three). The West, North Central⁴ and Northeast Regions each contain two divisions and the South Region, three.

Figure 1. Census Regions and Geographic Divisions



Standard Metropolitan Statistical Areas (SMSA's)

An SMSA is a large population nucleus, together with adjacent communities that have a high degree of economic and social integration with that nucleus. An SMSA basically consists of an urbanized area and the county(s) in which it is located, provided that these "central counties" contain a population of at least 100,000 (75,000 in New England cities and towns). Contiguous outlying counties are included in an SMSA if they are socially and economically integrated with the central county(s). The outlying counties must have a specified level of commuting to the central county(s) and must also meet certain standards regarding metropolitan character, such as population density, urban population, and population growth. (In New England, cities and towns, rather than counties, are used in defining SMSA's.)

The SMSA classification is a statistical standard, developed for use by Federal agencies in the production, analysis, and publication of data on metropolitan areas. SMSA's are defined and designated by the OMB, following a set of official published standards developed by the Interagency Federal Committee on Standard Metropolitan Statistical Areas.

"Standard metropolitan areas" were first defined and designated in 1949 by the Bureau of the Budget (now the OMB) and the word "statistical" was added in 1959. The definition was developed to replace at least four different sets of statistical-area definitions then in use for various data series of the Bureau of the Census and other agencies. Because of the multiple definitions, it had not been possible to relate statistics on population,

industrial production, labor markets, and other series for a metropolitan area because each series encompassed different geographic areas. The criteria for establishing SMSA's have been revised periodically since 1949.

New standards for designating and defining SMSA's were published in the *Federal Register* in January 1980; some were applied to designate new areas as a result of the 1980 census, but most went into effect June 30, 1983. The word "standard" was dropped and the term "metropolitan statistical area" went into effect in 1983 (see table 1, n. 3); however, "standard metropolitan statistical area" was used in all 1980 census publications.

There were 247 SMSA's in the 1970 census, including 3 in Puerto Rico, a number which grew through new designations to 288, including 4 in Puerto Rico by January 1980. Thirty-six new SMSA's, including 1 in Puerto Rico, were designated on June 19, 1981, based on the 1980 census results, using the newly established criteria. Of the 288 precensus SMSA's, one—Rapid City, SD, which had been designated based on estimates—was dropped because it did not meet either the old or new criteria. Thus, for the 1980 census, there were 323 SMSA's, including 5 in Puerto Rico. As commuting and other sample data became available from the census, the boundaries of each SMSA were reviewed and, as a result, counties were added or deleted in June 1983, based on their level of commuting to the central counties and their degree of metropolitan character; these changes were not reflected in the 1980 census publications.

Most SMSA's had at least one central city. The titles of SMSA's included up to three city names, as well as the name of each State into which the SMSA extended. The Nassau-Suffolk, NY, SMSA had no central city and the Northeast Pennsylvania SMSA had three central cities: Scranton, Wilkes-Barre, and Hazleton, PA.

Metropolitan/Nonmetropolitan Population

The metropolitan population is defined as the people living within SMSA's; the nonmetropolitan population is that living outside SMSA's. Metropolitan population is largely urban, but contains some rural components. By the same token, some of the urban population lives outside metropolitan areas.

The 1980 U.S. metropolitan population (excluding Puerto Rico) was 169.4 million, or 75 percent of the total of 226.5 million. The land area of the 318 U.S. SMSA's was about 566,000 square miles, or 16 percent of the total.

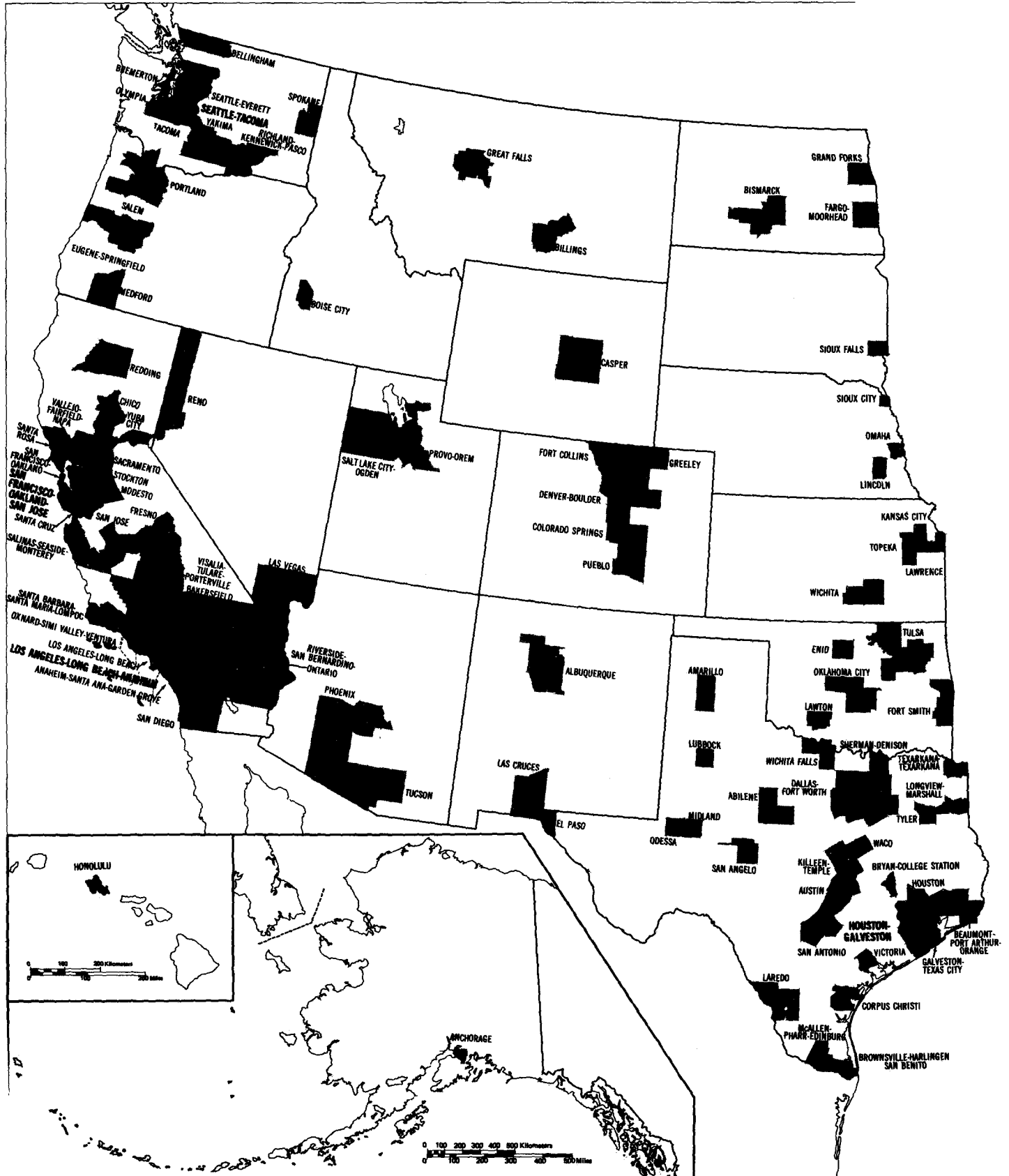
Standard Consolidated Statistical Areas (SCSA's)

SCSA's consist of two or more contiguous SMSA's that meet specific criteria of size, urban character, social and economic integration, and contiguity of urbanized area. They are essentially large metropolitan complexes in which sizable urban centers of independent origin are completely connected by urban development, so that there is no visible break between them. There were 17 SCSA's after the 1980 census, including 1 in Puerto Rico. Two were recognized in the 1970 census and 11 more were designated prior to 1980; based on the results of the census, 4 more SCSA's were defined, and 2 SMSA's were added to existing SCSA's. The new criteria implemented in 1983 for SMSA's also applied to SCSA's (see table 1, n. 3).

Renamed Midwest in June 1984.

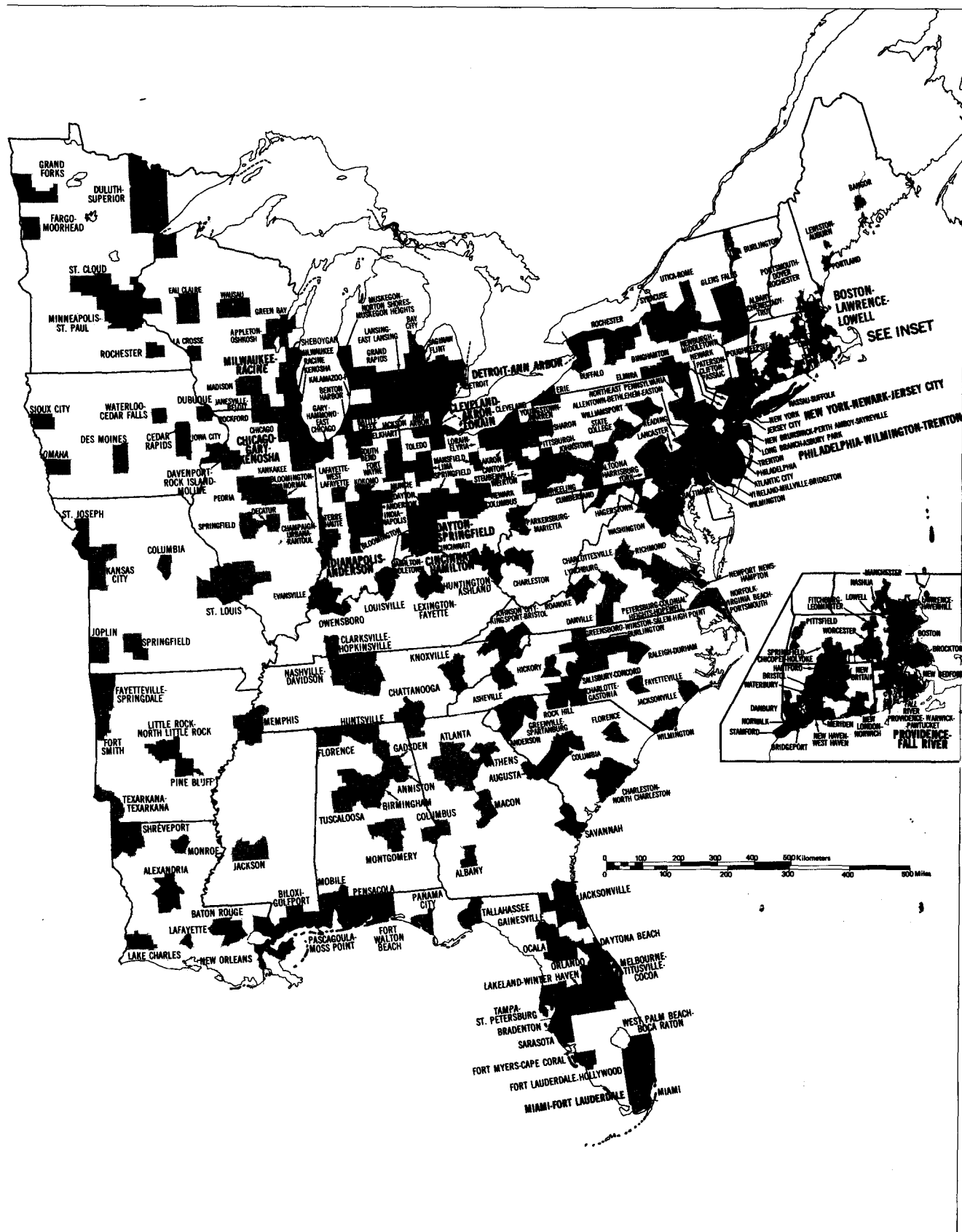
Appendix 3A. Geographic Areas

Figure 2. Standard Metropolitan Statistical Areas



U.S. Department of Commerce

Appendix 3A. Geographic Areas



BUREAU OF THE CENSUS

Urbanized Areas

Urbanized areas were first established for the 1950 census, primarily to distinguish the urban from the rural population in the vicinity of large cities where the urban population did not necessarily reside inside incorporated places of 2,500 inhabitants or more. Urbanized areas differ from SMSA's principally in that the urbanized areas include only the densely settled areas; SMSA's, which are composed of complete counties, often contain extensive rural territory.

For the 1980 census, an urbanized area contained a central city or cities, densely settled unincorporated territory adjacent to the central city, other adjacent incorporated places with dense settlement, and any contiguous parcels of nonresidential land devoted to urban land use (e.g., industrial parks, airports, etc.). The 1980 census qualifying criteria differed from those for 1970 in that all urbanized areas with 50,000 or more inhabitants were recognized regardless of the size of the central city, and the final delineations included more peripheral land areas devoted to urban land use. In 1970, the central city had to have at least 50,000 persons, or two adjacent cities had to have a combined population of at least 50,000, with the smaller one having a population of at least 15,000. A 1974 revision of the urbanized area criteria permitted designation of an urbanized area for a city of at least 25,000 population that, with contiguous places, had a combined population of at least 50,000 and a population density of at least 1,000 persons per square mile.

The urbanized area boundaries were based primarily on a density of at least 1,000 persons per square mile, but also included some less densely settled areas within corporate limits, and such areas as industrial parks and airports if they were within or adjacent to areas of dense urban development. The density level of 1,000 persons per square mile corresponded approximately to the continuously built-up area around a city. The "urban fringe" was that part of the urbanized area outside of the central city or cities.

Typically, an entire urbanized area is included within an SMSA. The SMSA is usually much larger in terms of territory and includes areas where the population density is less than 1,000. Occasionally, more than one urbanized area is located within an

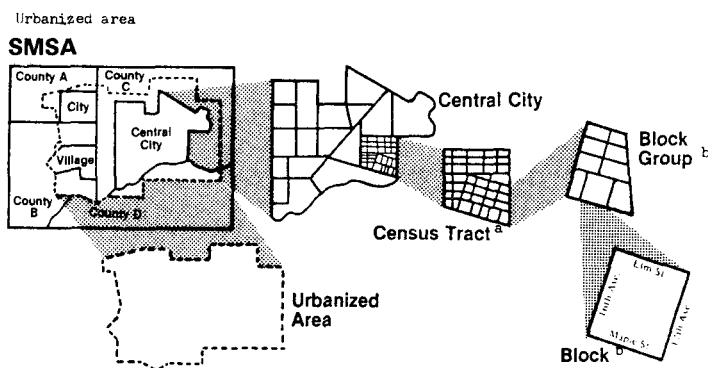
SMSA. In some cases, a small part of an urbanized area may extend beyond an SMSA boundary into an adjacent SMSA or into an area not in any SMSA. Twenty-three 1980 urbanized areas, including two in Puerto Rico, were defined in areas that did not meet the 100,000 total population criterion (75,000 in New England) for establishing SMSA's. Urbanized areas may cross State boundaries.

Urbanized areas were delimited on the basis of 1980 census results, rather than prior to the census. The population density for more than 400 potential urbanized areas was analyzed using 1980 census data, and based on this analysis 373 urbanized areas were designated, including 7 in Puerto Rico. This compares with 252 at the time of the 1970 census, including 4 in Puerto Rico, and 279 just before the 1980 census, including 4 in Puerto Rico.

As a basis for determining the extent of urbanized areas, an outer line was established for each urbanized area or potential urbanized area by examining the latest aerial photography, U.S. Geological Survey topographic quadrangle maps, and local data on population growth. The outer line encompassed all territory that appeared to meet the requirements of "urban" and extended into what clearly appeared to be rural territory. For already existing urbanized areas, an inner line was drawn approximating the 1970 boundaries, and the area within the inner line was automatically included in the 1980 urbanized area. The area between the inner and outer lines constituted the ring of potential growth for each urbanized area. This ring was subdivided into measurement units composed of one or more census blocks with a similar density of street development. Measurement units were included in or excluded from the final boundaries, depending on their population density, which was measured by using 1980 population and land area data.

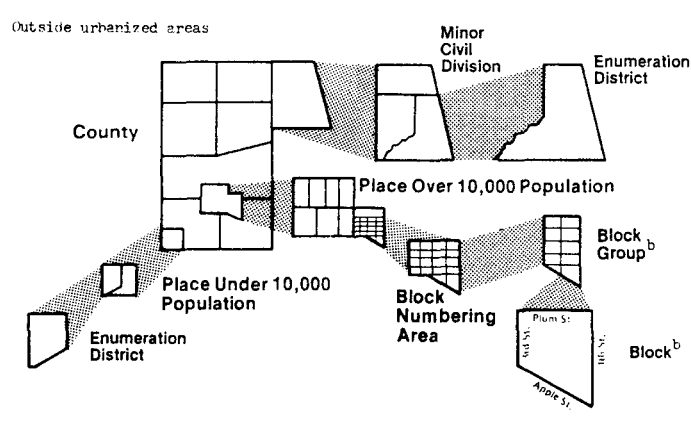
If it was determined that a sizable part of a place was rural in character, that part could be excluded from the urbanized area. The 87 cities thus classified as part urban and part rural were called "extended" cities. An extended city was defined as one that contained one or more areas that were each at least 5 square miles in extent and had a population density of less than 100 persons per square mile. These areas had to constitute at least 25 percent of the land area of the legal city or a total of 25 square miles or more.

Figure 3. Urbanized Areas



^a The entire MSA is subdivided into census tracts.

^b Blocks and block groups do not have symbolized boundaries as do the other areas, but are identified by number.



Appendix 3A. Geographic Areas

Urbanized areas covered about 52,000 square miles, or about 1.5 percent of the land area of the United States. The population in urbanized areas was 139.2 million, or 61.4 percent of the U.S. total.

Urban/Rural Population

The urban area of the United States comprises all urbanized areas and places of 2,500 or more inhabitants outside urbanized areas. The 1980 urban population was 167 million, or 74 percent of the total. The urban land area was about 74,000 square miles, or 2 percent of the total. All other areas were considered rural. The rural population was subdivided between farm and non-farm, based on answers to an item (H15) on the census sample (or long form) questionnaire which asked the number of acres on which a housing unit was located and the amount of income from sales of crops, livestock, and other farm products. (See ch. 12 for content items.) "Farm" was the designation for persons who resided on a place of one or more acres and had \$1,000 or more in sales of crops, livestock, and farm products from the place in 1979; everyone else was considered "nonfarm."

Census County Divisions (CCD's)

CCD's are county subdivisions that have been defined in each census since 1950 in States where there are no legally established MCD's, where the boundaries of MCD's change frequently, and/or where the MCD's are not generally known to the public. The CCD's were defined by the Census Bureau in cooperation with State and county officials and Census Statistical Areas Committees. The CCD's have generally been designed, using published guidelines, to represent community areas focused on trading centers or to represent major land-use areas, and to have visible, permanent, and easily described boundaries.

There were just over 7,000 CCD's in 21 States at the time of the 1970 census. The withdrawal of North Dakota from the CCD program and the consolidation of CCD's in many metropolitan areas resulted in a reduction in the total number to about 5,500 in 20 States for 1980. The States that contained CCD's were: Alabama, Arizona, California, Colorado, Delaware, Florida, Georgia, Hawaii, Idaho, Kentucky, Montana, New Mexico, Oklahoma, Oregon, South Carolina, Tennessee, Texas, Utah, Washington, and Wyoming.

CCD's in about three-fourths of the counties were revised for the 1980 census. Most revisions involved minor boundary adjustments where a feature used as a boundary in 1970 (a road, railroad, stream, etc.) had changed in alignment or disappeared altogether by 1980. Other changes were made to adjust CCD boundaries that coincided with the limits of incorporated places to avoid having to revise them constantly because of annexations. Major changes were made in SMSA counties where CCD's were combined and/or the CCD boundaries were adjusted to coincide with census tract boundaries.

Census subareas, which were similar to CCD's, were delineated for Alaska in a cooperative venture by the Bureau and the State. These areas replaced the "subdivisions" used in the 1970 census.

Census Designated Places (CDP's)

In each census beginning with 1950, the Census Bureau delineated boundaries for closely settled population centers

without corporate limits.⁵ In 1950, 1960, and 1970, these were called "unincorporated places"; for 1980, the name was changed to "census designated places" to make it explicit that such places are defined for census purposes and to avoid confusion in States where such places are part of incorporated MCD's (towns or townships). CDP's contain a city-type street pattern, and generally have a minimum population density of 1,000 persons per square mile. The typical CDP is a community identified locally by its place name that developed over the years to become a commercial or market center, in contrast to a subdivision, apartment development, or general urban-expansion area.

To be recognized in the 1980 census, CDP's had to meet minimum population criteria as follows.

Area	Minimum CDP population
Alaska	25
Hawaii, Virgin Islands, Guam, 14 Northern Mariana Islands, and the remainder of the Trust Territory of the Pacific Islands	300
Puerto Rico	*5,000
All other States:	
Inside urbanized areas:	
With one or more cities of 50,000 or more	5,000
With no city of 50,000 or more	1,000
Outside urbanized areas	1,000

In 11 States, some CDP's were coextensive with MCD's in urbanized areas: Connecticut, Maine, Massachusetts, Michigan, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, and Wisconsin. To qualify for identification as a coextensive CDP, an MCD (town or township) had to have a minimum population of 1,000 and at least 80 percent of its land area and 95 percent of its population within an urbanized area.

To report data for all qualified CDP's, the Bureau, prior to the enumeration, delineated as potential CDP's communities with an estimated population of at least 800 in areas where a minimum of 1,000 population was required for publication. In areas where the publication criterion was 5,000, potential CDP's were delineated if they had an estimated population of at least 4,500.

Comprehensive files were established in 1978 for approximately 5,000 potential CDP's. The primary sources for the files were the 1970 unincorporated place files, commercial atlases for 1977 and 1978, and information received from local sources. Officials designated by the Governor of each State revised and added to these listings, and provided maps or map revisions for all CDP's outside SMSA's estimated to have 800 or more inhabitants, following procedures provided by the Bureau. The Census Statistical Areas Committees assisted in revising and updating the boundaries for CDP's in the SMSA counties. As in the 1970 census, concentrated residential areas within military reservations were recognized as CDP's. Maps and population estimates for these places were obtained from the Department of Defense.

⁵Figures for unincorporated places were also published in the 1940 census, but the places were identified and delineated by the enumerators during the census rather than by headquarters personnel.

⁶CDP's in Puerto Rico were called aldeas (referred to as villages in 1970), and required a minimum of 1,000 persons, regardless of whether they were inside or outside urbanized areas. Municipio centers, referred to as "zonas urbanas" (previously called cities and towns), qualified regardless of population size.

Appendix 3A. Geographic Areas

The Bureau applied specific criteria for CDP's to determine whether a proposed CDP should be recognized and what its acceptable boundaries were. In delimiting CDP's, great care was used to designate as boundaries readily identifiable features such as highways, streets, streams, power lines, and, in mountainous areas, clearly defined ridgelines. More than 4,600 CDP's were designated in the United States, and 3,432 qualified for recognition in 1980 census publications; 301 additional CDP's and equivalents were designated in Puerto Rico and outlying areas and 273 qualified for publication.

Census Tracts

Census tracts are small statistical areas delineated by Census Statistical Areas Committees (CSAC's) in cooperation with and following guidelines provided by the Census Bureau. A census tract includes, on the average, about 4,000 residents, generally within a range of 2,500 to 8,000. A census tract may contain more than 8,000 people if the population is homogeneous and if there is no benefit in further subdividing the tract; in some instances, especially in central business districts of large cities, they may have fewer than 2,500 persons. The residents generally have similar social characteristics, economic status, and/or living conditions at the time the tracts are established.

Census tracts never cross county lines; within counties they may, but generally do not, coincide with MCD or place boundaries except in areas where legal boundary changes are rare. It is intended that census tracts remain reasonably stable from census to census so that historical comparability of data is retained. Thus, most boundaries are visible features that are easily identifiable and unlikely to change.

Census tracts were created for use in eight cities in the 1910 census. Tract data were first published in the 1940 census; by that time, 60 cities were included in the tract program, which was expanded greatly in subsequent censuses. Prior to 1940, such data were collected but not published; each city paid for its own tabulations. For the 1980 census, census tracts were established to cover in their entirety all SMSA's that had been established by January 1, 1980, many areas designated as potential SMSA's, and selected other counties that were adjacent to an SMSA and/or were highly populated. Five States—Connecticut, Delaware, Hawaii, New Jersey, and Rhode Island—and the District of Columbia were covered entirely by census tracts.

In 1975, the Bureau began to work with CSAC's to establish census tracts in qualifying areas that lacked census tracts and to review the structure of existing tracts for the 1980 census. The deadline for submitting new tract proposals was December 31, 1975, and the deadline for submitting revisions in areas that already had tracts was June 30, 1976. Revisions usually took the form of splitting tracts so that comparability between censuses was maintained, although in a few cases extensive redrawing of boundaries was undertaken. About 8 percent of the 1970 tracts were split for 1980. Bureau staff reviewed the local proposals to assure maintenance of a national standard. Bureau approval of a local plan was documented in the form of a manuscript map. The approved plans were then used in plotting tract boundaries on maps for enumeration and tabulation purposes.

For the 1980 census, there were about 43,200 census tracts in the United States, compared to the 34,500 recognized in 1970.

The number of tracts in SMSA's was about 40,000 and the number outside SMSA's was about 3,000. Approximately 80 percent of the population of the United States and 21 percent of the land area were in counties and county equivalents with census tracts.

Of the 323 SMSA's recognized in the census, 316 were completely covered by census tracts. Only the central counties had census tracts in the remaining seven SMSA's, all of which were newly designated: Arecibo, PR, Athens, GA, Bangor, ME, Burlington, VT, Charlottesville, VA, Cumberland, MD-VA, and Hickory, NC.

Census tracts are identified by a four-digit basic code, and some have a two-digit suffix. Leading zeros in a tract number (e.g., 0025.02) do not appear on census maps. Tract numbers always are unique within a county and, except for the New York SMSA, also are unique within an SMSA. All valid census tract numbers are in the range 0001 to 9899.99. A ".99" suffix indicates a tract to which only shipboard population was assigned.

Block-Numbering Areas (BNA's)

About 3,300 BNA's were established to provide a framework for numbering blocks in areas that did not have census tracts. They were used in urbanized areas that extend into untraced counties, places of 10,000 or more inhabitants outside of tracted areas, and in untraced areas participating in the contract block program. BNA's were numbered from 9901 to 9989.99. Again, a ".99" suffix indicated a BNA to which only shipboard population was assigned.

Enumeration Districts (ED's)

ED's are the basic administrative units for census field operations and cover the entire country. ED's are also tabulation units for nonblock-numbered areas and are equivalent to block groups, which are tabulation units for blocked areas.

Generally, an ED comprises the workload for a single enumerator; however, many ED's are of necessity considerably smaller in population than the optimum size. For the purpose of delineating ED's, the optimum size was set at 325 housing units in centralized district office areas; 550 housing units in decentralized office areas; 275 housing units in conventional office areas; and 70-100 housing units on American Indian reservations and in Puerto Rico and the outlying areas. ED's generally did not exceed 300 square miles in area, except in Alaska.

The other basic criterion in establishing ED's was that they could not cross the boundaries of the following higher-level geographic areas: State, county, MCD/CCD, place, census tract or BNA, district office, congressional district, American Indian reservation or subreservation area, Alaska Native village, the outer line of an urbanized area, the outermost extent of contract block areas, the limit of TAR areas, or election precincts (outside of block-numbered areas).

ED's in TAR areas were structured by computer at the Bureau following the size and boundary criteria mentioned.⁷ Local communities were given an opportunity to participate in the delineation of ED's outside of the potential extent of urbanized areas, but their proposals had to meet the Bureau's criteria. In SMSA's,

⁷Except for Indian reservation, military installation, and crews-of-vessels ED's, which were clerically delineated even though located in TAR areas.

Appendix 3A. Geographic Areas

priority in delineating ED's was given to the CSAC's. Elsewhere, if a State was participating in the election precinct program, its plan was given precedence over local plans. In all cases where two or more local agencies or governmental units covered the same area, they were informed of the other agency's participation so that they could attempt to develop a mutually acceptable ED plan. The local ED program was announced in the Bureau's *Data User News* in December 1976, and an informational package was sent to participating localities in March 1977. The deadline for submitting ED plans to the Bureau was October 1, 1977.

ED data were tabulated for the 102,000 ED's in nonblock-numbered areas of the United States, Puerto Rico, and the outlying areas. No data were made public for the 238,000 ED's in block-numbered areas of the United States and Puerto Rico; rather, data were provided by block groups. ED's are identified by a four-digit basic number, including leading zeros; however, the leading zeros were not shown on the census maps. ED numbers were not shown in block-numbered areas on public versions of the 1980 census maps. ED numbers were unique within district office and within county. Some ED's had a one-letter suffix to facilitate the separate identification of unique geographic areas whose existence was only determined after the original delineation or to expedite field or processing operations; for example, an ED may have contained far more people or housing units than estimated and therefore had to be "split" to facilitate enumeration and/or processing. ED's also could have a one-letter prefix, but this was not an integral part of the ED number. The prefix identified ED's in which special enumeration and tabulation procedures were to be used, for example, ED's on American Indian reservations were prefixed "N."

Block Groups

Data were tabulated for about 200,000 block groups (or parts of block groups) in block-numbered areas of the United States and Puerto Rico. Block groups, which were subdivisions of census tracts or BNA's, were defined by the first digit of the three-digit block numbers. For example, all blocks numbered in the range 101 to 199 in a census tract or BNA would constitute block group 1 (or that portion of block group 1 within a specified area, such as a city, if the block group was split by a higher-level geographic boundary).

Blocks

Blocks are the smallest geographic area for which data are collected. A block is usually a well defined rectangular piece of land bounded by streets and roads; however, it may be irregular in shape and bounded by physical features such as railroad tracks

or streams. Blocks do not cross the boundaries of counties, tracts, or block numbering areas; thus, some blocks may be bounded by nonphysical features such as political or statistical boundaries. Blocks may cross place and county subdivision boundaries. Only selected statistics based on the complete-count part of the census were published for blocks, and no sample data were available at this level.

Block statistics were published for all urbanized areas, including the territory within the outer line beyond the final urbanized area, all incorporated places of 10,000 or more people (as of the 1970 census or an official Bureau estimate through 1976), and any other areas that contracted with the Bureau to provide block-level data. Under the contract block statistics program, data were tabulated by block for five entire States: Georgia, Mississippi, New York, Rhode Island, and Virginia. All contract work involved reimbursement of cost to the Bureau by the requesting area's government, but if any incorporated place for which there was such a contract with the Bureau in advance of the 1980 census reached a population of 10,000 or more in the census, its contract fee was refunded. The fees ranged from \$500 to \$700 for areas under 10,000 people, and the cost for an area with a population of 10,000 or more (such as a State) was determined on an individual basis.

Each block was identified by a three-digit number that was unique within a census tract or BNA. Blocks were numbered from 101 to 999, but 300, 400, 500, 600, 700, 800, and 900 were never used and 990-999 were rarely used; 100 (civilian) and 200 (military and Coast Guard) were used for shipboard populations in blocknumbered areas. If a place contained blocks, it was block-numbered in its entirety, except in a few cases where only the portion of a place in a contracting county was blocked; other areas—counties, MCD's, tracts, etc.—were only partially block-numbered in many cases. The nonblock-numbered portion of the county was actually block-numbered (001-099), but only for administrative purposes in the field operations. These block numbers appeared only on the enumerator maps and no data were tabulated for them.

In many areas, most block boundaries and numbers were the same in 1980 as in 1970. In a few SMSA's, blocks were renumbered extensively by GBF/DIME-file coordinating agencies to define more optimal block groups. Some 1970 blocks had new boundaries for 1980, primarily because street patterns had changed. Wherever a block was redefined by splitting or other adjustment, the 1970 block number usually was not reused, to help data users notice the change.

There were 2,458,000 uniquely numbered blocks. Blocks that were split by boundaries of higher-level geographic areas had data tabulated for each portion, resulting in data for more than 2,520,000 blocks and block parts.

Appendix 3B. Advance Post Office Check Cards

Form D-700A (buff)

A. MAKE NO MARK ON THIS CARD IF THE ADDRESS SHOWN (INCLUDING CARRIER ROUTE NUMBER) IS CORRECT FOR AN OCCUPIED OR VACANT LIVING QUARTERS. OTHERWISE, MARK AN "X" IN THE APPROPRIATE BOX BELOW, EXCEPT BOX 5.

3

☐

CORRECTED AS SHOWN IN PART B

→

(Make any corrections on the label except house number. If house number is wrong, mark box 7 and complete a blue card (D-702) for the correct address. If this address is for a special place and the name is omitted, enter it below.)

Special place name

Code

4

☐

DUPLICATE

5

☐

MIS-SORT *(Give to supervisor – DO NOT mark the box)*

6

☐

BUSINESS ONLY *(No living quarters)*

7

☐

UNDELIVERABLE – Give reason

↓

FORM D-700A
(11-1-78)

U.S. DEPARTMENT OF COMMERCE
BUREAU OF THE CENSUS

ADDRESS CARD
20th Decennial Census – 1980

The release of this information to the Census Bureau is authorized under 39 CFR 266.4(b)(2)(v).

U. S. GOVERNMENT PRINTING OFFICE : 1979-658-263

Form D-700C (yellow)

A. MAKE NO MARK ON THIS CARD IF THE ADDRESS SHOWN (INCLUDING CARRIER ROUTE NUMBER) IS CORRECT FOR AN OCCUPIED OR VACANT LIVING QUARTERS. OTHERWISE, MARK AN "X" IN THE APPROPRIATE BOX BELOW, EXCEPT BOX 5.

3

☐

CORRECTED AS SHOWN IN PART B

→

Make any corrections in part B except house number. If house number is wrong, mark box 7.

4

☐

DUPLICATE

5

☐

MIS-SORT *(Give to supervisor – DO NOT mark the box)*

6

☐

BUSINESS ONLY *(No living quarters)*

7

☐

UNDELIVERABLE – Give reason

↓

FORM D-700C
(3-12-79)

U.S. DEPARTMENT OF COMMERCE
BUREAU OF THE CENSUS

ADDRESS CARD
20th Decennial Census – 1980

The release of this information to the Census Bureau is authorized under 39 CFR 266.4(b)(2)(v).

Appendix 3C. Prelist Address Register

Form D-101 (cover)

Form D-101 (5-7-79)				U.S. DEPARTMENT OF COMMERCE BUREAU OF THE CENSUS		BOOK _____ OF _____ BOOKS	
1. IDENTIFICATION				PRELIST ADDRESS REGISTER 20th Decennial Census — 1980			
a. ED No.	c. District Office	Code		NOTICE — Your report to the Census Bureau is confidential by law (title 13, U.S. Code). It may be seen only by sworn Census employees and may be used only for statistical purposes.			
	d. County	Code					
b. Tract No.	e. State	Code					
2. ASSIGNMENT INFORMATION							
a. Crew leader	Name	Address	Telephone No.	Date assigned	C.L. District No.		
b. Enumerator							
c. Reassignment enumerator(s)							
3. ENUMERATOR'S DAILY PROGRESS RECORD							
a. Month of listing							
b. Date of listing							
c. Living quarters listed today							
d. Living quarters listed to date							
NOTICE TO FINDER — This book is the property of the United States Government. Please mail it to the address shown below. Postage is prepaid.				4. PAYROLL INFORMATION			
From (Finder's name and address)				Method of payment — Enumerator: The entry below shows your method of payment, your payroll form shows your rate of pay.			
				1980 pay code			
				1 <input type="checkbox"/> Piece rate only 3 <input type="checkbox"/> Piece rate, time enroute, and mileage 1 <input type="checkbox"/> 3 <input type="checkbox"/>			
				2 <input type="checkbox"/> Piece rate and mileage 4 <input type="checkbox"/> Hourly rate and mileage 2 <input type="checkbox"/> 4 <input type="checkbox"/>			
				5. POSTAL CORRECTIONS			
				a. Date completed b. Initials c. No. of postal adds			
				6. QUALITY CONTROL			
				a. No. of listing check errors b. Rechecked (Mark (X) below) c. Total pages with entries (Include special place pages.)			

Form D-101 (inside cover)

RECORD OF FIRST REVIEW		Mark (X) one	
Review the ED map and Prelist Address Register and rate the enumerator on the following aspects of the job.		Yes	No
1. Is the enumerator –			
a. Canvassing and listing block-by-block in a systematic manner?			
b. Canvassing one side of a street or road at a time?			
c. Staying within the ED boundaries?			
d. Updating the map or drawing insert sketches when necessary?			
e. Making address register entries in a legible manner?			
f. Spotting serial numbers on the map for each listing or writing "(No LQ)" along any canvassed road section with no map spots?			
g. Circling block numbers on the map for each canvassed block?			
h. Entering a complete mailing address for each listing?			
i. Listing special places and clusters as prescribed?			
j. Completing an average of at least 60 listings per day?			
RESULTS	<input type="checkbox"/> SATISFACTORY	The enumerator should continue working and no additional review is necessary before Final Review.	
	<input type="checkbox"/> NEEDS IMPROVEMENT	The enumerator should continue working, but an additional review must be made before Final Review. Arrange to meet the enumerator again and review the work for all items marked "No" during First Review.	
	<input type="checkbox"/> UNSATISFACTORY	The enumerator is unable to do the job and should be replaced. Tell the enumerator to STOP working until you are able to see him/her again. Discuss the situation immediately with your supervisor.	
Notes			

Form D-101 (6-17-79)

RECORD OF FINAL REVIEW			
Complete this review for each Prelist Address Register turned in.			
	Crew leader Mark (X) one		Office Mark (X) one
	Yes	No	Yes
1. Look at the ED map			
a. Does map spotting show the ED was listed block-by-block in a systematic manner?			
b. Are all serial numbers and special place control numbers spotted?			
c. Have cancelled serial and control numbers been erased from the map?			
d. Do all road sections contain map spots or the entry "No LQ"?			
e. Has the map been updated or insert sketches drawn when necessary?			
f. Are "cluster" addresses properly spotted?			
g. Are all block numbers circled?			
2. Look at each address listing page			
a. Is column (1) the same for the entire page?			
b. Does the first line on each completed page carry a full street name in column (2) or "No living quarters" in columns (1a) and (2)?			
c. Are vertical lines used when an entry is repeated?			
d. Does each address have legible and consistent entries in columns (2) through (5d)?			
e. Are special places listed on the Special Place Address Listing Pages?			
3. Advance Listing Check			
a. Were all but zero or one advance listing found and listed by the enumerator?			
RESULTS	<input type="checkbox"/> PASSED	All "Yes" above.	
	<input type="checkbox"/> FAILED	One or more "No's." Correct or assign for recanvass as appropriate.	
Notes			

[illegible]

Form D-101B

Form Approved: O.H.B. No. 41-578061

Block No. (1)	Control No. (Spot on map) (2)	Name of Special Place (3)	House No. (4)	Street name, Rural Route and Box No., or Lockbox No. (5)	POST OFFICE			Type of Special Place (7)	Remarks (8)
					Name (6a)	State (6b)	ZIP code (6c)		
	SP-1								
	SP-2								
	SP-3								
	SP-4								
	SP-5								
	SP-6								
	SP-7								
	SP-8								
	SP-9								
	SP-10								
	SP-11								
	SP-12								
	SP-13								
	SP-14								
	SP-15								
	SP-16								
	SP-17								
	SP-18								
	SP-19								
	SP-20								
<div>Form D-101B 15-741 U.S. DEPARTMENT OF COMMERCE BUREAU OF THE CENSUS</div> <div>SPECIAL PLACE ADDRESS LISTING PAGE 20th Decennial Census - 1980</div>					(9) D.O. No.				
								(10) ED No.	
								(11) ED page	
								1 OF	

Example page for enumerators's reference

**U.S. DEPARTMENT OF COMMERCE
BUREAU OF ECONOMIC ANALYSIS**

ADDRESS LISTING PAGE
20th Decennial Census - 1980

Form No. D-101A

Block No. 017

Full name of householder (1a) Games A. Huff

House No. (2) 809

Street No. or Locality No. (3) Sunset Dr.

Post Office Name (5a) Anytown

State ZIP code (5b) WA 00100

Apartment No. or unit designating (4)

How would you describe the person who owns or rents this living quarters? What is the EXACT MAILING ADDRESS used by the household (house No., street name, box No., or route and box No., post office name, and ZIP code)? (1b) (1c) (1d) (1e) (1f) (1g) (1h) (1i) (1j) (1k) (1l) (1m) (1n) (1o) (1p) (1q) (1r) (1s) (1t) (1u) (1v) (1w) (1x) (1y) (1z) (1aa) (1ab) (1ac) (1ad) (1ae) (1af) (1ag) (1ah) (1ai) (1aj) (1ak) (1al) (1am) (1an) (1ao) (1ap) (1aq) (1ar) (1as) (1at) (1au) (1av) (1aw) (1ax) (1ay) (1az) (1ba) (1bb) (1bc) (1bd) (1be) (1bf) (1bg) (1bh) (1bi) (1bj) (1bk) (1bl) (1bm) (1bn) (1bo) (1bp) (1bq) (1br) (1bs) (1bt) (1bu) (1bv) (1bw) (1bx) (1by) (1bz) (1ca) (1cb) (1cc) (1cd) (1ce) (1cf) (1cg) (1ch) (1ci) (1cj) (1ck) (1cl) (1cm) (1cn) (1co) (1cp) (1cq) (1cr) (1cs) (1ct) (1cu) (1cv) (1cw) (1cx) (1cy) (1cz) (1da) (1db) (1dc) (1dd) (1de) (1df) (1dg) (1dh) (1di) (1dj) (1dk) (1dl) (1dm) (1dn) (1do) (1dp) (1dq) (1dr) (1ds) (1dt) (1du) (1dv) (1dw) (1dx) (1dy) (1dz) (1ea) (1eb) (1ec) (1ed) (1ee) (1ef) (1eg) (1eh) (1ei) (1ej) (1ek) (1el) (1em) (1en) (1eo) (1ep) (1eq) (1er) (1es) (1et) (1eu) (1ev) (1ew) (1ex) (1ey) (1ez) (1fa) (1fb) (1fc) (1fd) (1fe) (1ff) (1fg) (1fh) (1fi) (1fj) (1fk) (1fl) (1fm) (1fn) (1fo) (1fp) (1fq) (1fr) (1fs) (1ft) (1fu) (1fv) (1fw) (1fx) (1fy) (1fz) (1ga) (1gb) (1gc) (1gd) (1ge) (1gf) (1gg) (1gh) (1gi) (1gj) (1gk) (1gl) (1gm) (1gn) (1go) (1gp) (1gq) (1gr) (1gs) (1gt) (1gu) (1gv) (1gw) (1gx) (1gy) (1gz) (1ha) (1hb) (1hc) (1hd) (1he) (1hf) (1hg) (1hh) (1hi) (1hj) (1hk) (1hl) (1hm) (1hn) (1ho) (1hp) (1hq) (1hr) (1hs) (1ht) (1hu) (1hv) (1hw) (1hx) (1hy) (1hz) (1ia) (1ib) (1ic) (1id) (1ie) (1if) (1ig) (1ih) (1ii) (1ij) (1ik) (1il) (1im) (1in) (1io) (1ip) (1iq) (1ir) (1is) (1it) (1iu) (1iv) (1iw) (1ix) (1iy) (1iz) (1ja) (1jb) (1jc) (1jd) (1je) (1jf) (1jg) (1jh) (1ji) (1jj) (1jk) (1jl) (1jm) (1jn) (1jo) (1jp) (1jq) (1jr) (1js) (1jt) (1ju) (1jv) (1jw) (1jx) (1jy) (1jz) (1ka) (1kb) (1kc) (1kd) (1ke) (1kf) (1kg) (1kh) (1ki) (1kj) (1kk) (1kl) (1km) (1kn) (1ko) (1kp) (1kq) (1kr) (1ks) (1kt) (1ku) (1kv) (1kw) (1kx) (1ky) (1kz) (1la) (1lb) (1lc) (1ld) (1le) (1lf) (1lg) (1lh) (1li) (1lj) (1lk) (1ll) (1lm) (1ln) (1lo) (1lp) (1lq) (1lr) (1ls) (1lt) (1lu) (1lv) (1lw) (1lx) (1ly) (1lz) (1ma) (1mb) (1mc) (1md) (1me) (1mf) (1mg) (1mh) (1mi) (1mj) (1mk) (1ml) (1mm) (1mn) (1mo) (1mp) (1mq) (1mr) (1ms) (1mt) (1mu) (1mv) (1mw) (1mx) (1my) (1mz) (1na) (1nb) (1nc) (1nd) (1ne) (1nf) (1ng) (1nh) (1ni) (1nj) (1nk) (1nl) (1nm) (1nn) (1no) (1np) (1nq) (1nr) (1ns) (1nt) (1nu) (1nv) (1nw) (1nx) (1ny) (1nz) (1oa) (1ob) (1oc) (1od) (1oe) (1of) (1og) (1oh) (1oi) (1oj) (1ok) (1ol) (1om) (1on) (1oo) (1op) (1oq) (1or) (1os) (1ot) (1ou) (1ov) (1ow) (1ox) (1oy) (1oz) (1pa) (1pb) (1pc) (1pd) (1pe) (1pf) (1pg) (1ph) (1pi) (1pj) (1pk) (1pl) (1pm) (1pn) (1po) (1pp) (1pq) (1pr) (1ps) (1pt) (1pu) (1pv) (1pw) (1px) (1py) (1pz) (1qa) (1qb) (1qc) (1qd) (1qe) (1qf) (1qg) (1qh) (1qi) (1qj) (1qk) (1ql) (1qm) (1qn) (1qo) (1qp) (1qq) (1qr) (1qs) (1qt) (1qu) (1qv) (1qw) (1qx) (1qy) (1qz) (1ra) (1rb) (1rc) (1rd) (1re) (1rf) (1rg) (1rh) (1ri) (1rj) (1rk) (1rl) (1rm) (1rn) (1ro) (1rp) (1rq) (1rr) (1rs) (1rt) (1ru) (1rv) (1rw) (1rx) (1ry) (1rz) (1sa) (1sb) (1sc) (1sd) (1se) (1sf) (1sg) (1sh) (1si) (1sj) (1sk) (1sl) (1sm) (1sn) (1so) (1sp) (1sq) (1sr) (1ss) (1st) (1su) (1sv) (1sw) (1sx) (1sy) (1sz) (1ta) (1tb) (1tc) (1td) (1te) (1tf) (1tg) (1th) (1ti) (1tj) (1tk) (1tl) (1tm) (1tn) (1to) (1tp) (1tq) (1tr) (1ts) (1tt) (1tu) (1tv) (1tw) (1tx) (1ty) (1tz) (1ua) (1ub) (1uc) (1ud) (1ue) (1uf) (1ug) (1uh) (1ui) (1uj) (1uk) (1ul) (1um) (1un) (1uo) (1up) (1uq) (1ur) (1us) (1ut) (1uu) (1uv) (1uw) (1ux) (1uy) (1uz) (1va) (1vb) (1vc) (1vd) (1ve) (1vf) (1vg) (1vh) (1vi) (1vj) (1vk) (1vl) (1vm) (1vn) (1vo) (1vp) (1vq) (1vr) (1vs) (1vt) (1vu) (1vv) (1vw) (1vx) (1vy) (1vz) (1wa) (1wb) (1wc) (1wd) (1we) (1wf) (1wg) (1wh) (1wi) (1wj) (1wk) (1wl) (1wm) (1wn) (1wo) (1wp) (1wq) (1wr) (1ws) (1wt) (1wu) (1wv) (1ww) (1wx) (1wy) (1wz) (1xa) (1xb) (1xc) (1xd) (1xe) (1xf) (1xg) (1xh) (1xi) (1xj) (1xk) (1xl) (1xm) (1xn) (1xo) (1xp) (1xq) (1xr) (1xs) (1xt) (1xu) (1xv) (1xw) (1xx) (1xy) (1xz) (1ya) (1yb) (1yc) (1yd) (1ye) (1yf) (1yg) (1yh) (1yi) (1yj) (1yk) (1yl) (1ym) (1yn) (1yo) (1yp) (1yq) (1yr) (1ys) (1yt) (1yu) (1yv) (1yw) (1yx) (1yy) (1yz) (1za) (1zb) (1zc) (1zd) (1ze) (1zf) (1zg) (1zh) (1zi) (1zj) (1zk) (1zl) (1zm) (1zn) (1zo) (1zp) (1zq) (1zr) (1zs) (1zt) (1zu) (1zv) (1zw) (1zx) (1zy) (1zz) (1aa) (1ab) (1ac) (1ad) (1ae) (1af) (1ag) (1ah) (1ai) (1aj) (1ak) (1al) (1am) (1an) (1ao) (1ap) (1aq) (1ar) (1as) (1at) (1au) (1av) (1aw) (1ax) (1ay) (1az) (1ba) (1bb) (1bc) (1bd) (1be) (1bf) (1bg) (1bh) (1bi) (1bj) (1bk) (1bl) (1bm) (1bn) (1bo) (1bp) (1bq) (1br) (1bs) (1bt) (1bu) (1bv) (1bw) (1bx) (1by) (1bz) (1ca) (1cb) (1cc) (1cd) (1ce) (1cf) (1cg) (1ch) (1ci) (1cj) (1ck) (1cl) (1cm) (1cn) (1co) (1cp) (1cq) (1cr) (1cs) (1ct) (1cu) (1cv) (1cw) (1cx) (1cy) (1cz) (1da) (1db) (1dc) (1dd) (1de) (1df) (1dg) (1dh) (1di) (1dj) (1dk) (1dl) (1dm) (1dn) (1do) (1dp) (1dq) (1dr) (1ds) (1dt) (1du) (1dv) (1dw) (1dx) (1dy) (1dz) (1ea) (1eb) (1ec) (1ed) (1ee) (1ef) (1eg) (1eh) (1ei) (1ej) (1ek) (1el) (1em) (1en) (1eo) (1ep) (1eq) (1er) (1es) (1et) (1eu) (1ev) (1ew) (1ex) (1ey) (1ez) (1fa) (1fb) (1fc) (1fd) (1fe) (1ff) (1fg) (1fh) (1fi) (1fj) (1fk) (1fl) (1fm) (1fn) (1fo) (1fp) (1fq) (1fr) (1fs) (1ft) (1fu) (1fv) (1fw) (1fx) (1fy) (1fz) (1ga) (1gb) (1gc) (1gd) (1ge) (1gf) (1gg) (1gh) (1gi) (1gj) (1gk) (1gl) (1gm) (1gn) (1go) (1gp) (1gq) (1gr) (1gs) (1gt) (1gu) (1gv) (1gw) (1gx) (1gy) (1gz) (1ha) (1hb) (1hc) (1hd) (1he) (1hf) (1hg) (1hh) (1hi) (1hj) (1hk) (1hl) (1hm) (1hn) (1ho) (1hp) (1hq) (1hr) (1hs) (1ht) (1hu) (1hv) (1hw) (1hx) (1hy) (1hz) (1ia) (1ib) (1ic) (1id) (1ie) (1if) (1ig) (1ih) (1ii) (1ij) (1ik) (1il) (1im) (1in) (1io) (1ip) (1iq) (1ir) (1is) (1it) (1iu) (1iv) (1iw) (1ix) (1iy

Appendix 3D. Prelist Office Sites

PRELIST OFFICE

Boston Regional Census Center (RCC)

Rochester, NY

New York RCC

Philadelphia RCC

Annapolis, MD

Detroit RCC

Columbus, OH

Chicago RCC

Springfield, IL

Indianapolis, IN

Louisville, KY

Kansas City RCC

Topeka, KS

Des Moines, IA

St. Paul, MN

Madison, WI

Seattle RCC

Charlotte RCC

Raleigh, NC

Columbia, SC

Charleston, WV

Richmond, VA

Atlanta RCC

Tallahassee, FL

Tampa, FL

Birmingham, AL

Nashville, TN

Dallas RCC

Austin, TX

Baton Rouge, LA

Little Rock, AR

Jackson, MS

Denver RCC

Phoenix, AZ

Oklahoma City, OK

Omaha, NE

Los Angeles RCC

San Jose, CA

STATES COVERED¹

Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont

New York (part)

New Jersey (part), New York (part)

New Jersey (part), Pennsylvania

Delaware, Maryland

Michigan

Ohio

Illinois (part)

Illinois (part)

Indiana

Kentucky

Missouri

Kansas

Iowa

Minnesota

Wisconsin

Idaho, Montana, Nevada, North Dakota, Oregon, Utah, Washington

North Carolina (part)

North Carolina (part)

South Carolina

Virginia (part), West Virginia

Virginia (part)

Georgia

Florida (part)

Florida (part)

Alabama

Tennessee

Texas (part)

Texas (part)

Louisiana

Arkansas

Mississippi

Colorado, New Mexico

Arizona

Oklahoma

Nebraska, South Dakota

California (part), Hawaii

California (part)

¹There were no prelist offices in Alaska, Wyoming, the District of Columbia, Puerto Rico, and the outlying areas.